Ontario

Report of the Royal Commission on the Status of Pensions in Ontario

VOLUME IX

Background Studies and Papers

1980

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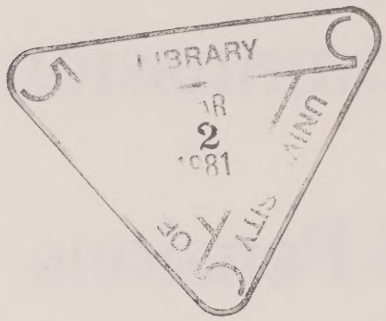

Aging and Retirement: A Survey of the Sociological Literature

Daniel Kubat

June, 1978

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Aging and Retirement: A Survey of the Sociological Literature

Any consideration of pension issues must be set within the broader context of retirement. Retirement is a social phenomenon and not simply a function of aging. This paper surveys the literature on retirement, concentrating upon understanding aging and the social implications of aging. It deals with preferences for early or late retirement, evaluation of retirement, preparation for it, and adjustments to it. Most of the studies mentioned deal with North American conditions and are used here mainly as illustrations of the breadth and diversity of opinions in the literature rather than as a selection aimed at proving a specific theory. While American studies are more plentiful than Canadian studies, their findings are valuable for both countries.

THEORIES OF AGING

Although the literature on aging is vast and has become much more extensive in the last twenty years, two main theoretical approaches provide an essential understanding of the social aspects of the process: the "disengagement theory," developed initially by Elaine Cumming,(1) and the "activity theory," advanced by George L. Maddox and Ida H. Simpson.(2) According to the disengagement theory, individual disengagement during the aging process involves a withdrawal from numerous commitments to the fulfilment of only a limited number of social roles. Disengagement proceeds too at the social level, as society withdraws support from these individuals, ceases to expect a commitment from them, and forces retirement upon them. Cumming has summarized the three elements of the process as follows:

> "1. The life space of an individual decreases with age, in that he interacts with a narrower variety of role partners and spends a smaller proportion of his time in interaction.
> 2. The individual anticipates this change and participates in the process.
> 3. The individual's preference for interpersonal rewards becomes more individualized and less role connected as he gets older, and thus his style of interaction changes."(3)

For example, persons aged 75 or over report fewer interactions with others than those aged 60 to 64. Critics of this theory argue that it is bound to hold if age groups compared are widely separated. One implication of the theory is that financial obligations and needs will decline as disengagement progresses.

In contrast, the activity theory holds that continued productivity and social interaction are essential to human satisfaction and well-being. Proponents of this school of thought argue that existing lifestyles continue into retirement, that there is no sharp discontinuity in

the aging process, and (when put in its extreme form) see the individual "dying with his boots on." Those who hold this theory, however, take into account the necessary reduction of activity that results from decreased energy as a result of aging.(4)

In general the distinctions between these two theories are largely a matter of emphasis and to a lesser extent a result of different research methods. It has been pointed out that the selection and size of the sample being examined influence the outcome of each study.

Most of the findings in this field bear only indirectly on pension issues. But they have raised some pertinent questions. For example: what is the relationship between the size of pension provided and the willingness to retire early? Is the level of income of retired persons a factor affecting their willingness to participate or withdraw from work-related activities? To what extent does the social status of the aged govern attitudes towards continuing work or retiring? These external or social, aspects of aging have a greater influence than personal desires on withdrawal or disengagement. Forced retirement or the loss of a spouse are events that may also alter the outlook and activity of the aged drastically. An increase of morbidity after such traumas is well documented in the literature of social gerontology. Events external to an individual, such as inadequate old age pensions, or stress associated with the loss of friends or relatives appear to encourage disengagement. These events lead, in the words of one study, to a "general shrinking of the social world" or the phenomenon known as disengagement:

> "There appears to be a substantial evidence for our hypothesis that disengagement among the aged can be predicted to occur as a concomitant of physical or social stresses which profoundly affect the manner in which the life pattern of the person is redirected. Because they have ignored the apparently definitive effect of such factors on disengagement, Cumming and Henry [the proponents of the disengagement theory] were led to the conclusion that advancing age was a sufficient explanation of the facts obtained in their study. It is not age which produces disengagement in our investigation but the impact of physical or social stress which may be expected to increase with age. It is tempting to hypothesize that as one enters into later decades, disengagement is bound to grow, and indeed, it does. The real difficulty lies in the fact that it is the correlates of old age, i.e., failing health, loss of peers, death of relatives, and the general shrinking of the social world due to factors related to aging, that appear to produce the social withdrawal known as disengagement."(5)

While external factors have a great bearing upon the willingness to retire, or disengage oneself, the relationship between each individual decision and these external constraints is by no means simple or direct. People of higher social status who hold attractive and challenging jobs tend to continue to work even though they could retire comfortably.

Although they can afford to retire they choose to remain active.(6) At the other extreme, those in unattractive, lower status positions generally retire at the earliest opportunity, even when given the choice of staying on the job.(7)

STUDIES OF RETIREMENT

Man, seen from the perspective of the social sciences, is a creature of habit, his behaviour controlled by symbols. Inasmuch as these symbols, such as social conventions, customs, norms, and values, change or vary from group to group, the size and composition of various groups will determine or influence the meaning of various symbols. One of the symbols affecting retirement is whether work is defined as desirable or necessary. The most influential source of attitudes towards work and retirement is the collective experience a cohort of persons acquire during their lifetime. Belonging to and participating in the experiences of a particular generation shapes one's outlook on life. For example, the history of post-war baby boom generation is crucial to any speculation about its behaviour upon entering retirement. The size of this group and the permissiveness in their training at home and at school encouraged the cohort members to form primary relations with their age peers. Accordingly these relationships proved more influential in shaping attitudes than adult authority, a fact that becomes clearer when some of the notions of this group are compared with those of the preceding generation.

There is evidence for instance, that present-day youth do not share the previous generation's attitudes towards work.(8) This changing perception of work will, in turn, have far-reaching implications in shaping other social attitudes, if this cohort retains its outlook on the world and on work for the remainder of its life. Labour force participation will be affected by the willingness of workers either to drop out whenever other support funds become available or to alternate periods of work with time spent drawing social assistance, perhaps in combination with other household members. Such lifestyles have become possible with the availability of social services and transfer payments in advanced industrial societies.

Attitudes Towards Retirement

Most studies of retirement conducted by sociologists deal with the way people cope with it, how they prepare for it, and what they expect from it. The subjects of these studies, usually survey respondents, are mostly middle-aged and nearing retirement or already retired; in other words, they share common experiences that influence their attitudes towards retirement, pensions, and work. In very general terms, it might be said of this cohort that work was a normative expectation and also that work is for males and housework for females; and that retirement represents an abrupt discontinuity with lowered morale unless some valid

excuses are available such as ill health or forced retirement. Retirement represents a discontinuity of the self-definition particularly in males.

The consequences of this break with experience have been much studied. In a survey of 182 non-institutionalized subjects 60 years and over completed in 1963, Maddox showed that contact with the environment decreased with age and that this was accompanied by a corresponding lowering of the subjects' morale.(9) In contrast, a 1970 study of residents of a retirement community found little change in activity levels before and after retirement. Indeed, this group showed a preference for leisure rather than work-related activities. The subjects were well above the poverty line, had migrated to Arizona from various parts of the United States, and were part of the newly emergent, personal expressive, consumption-oriented middle class. This latter group may well represent the forerunners of future retirees who will be better educated, healthier, with more active, wider ranging interests. Recent research has suggested that middle-aged urban workers who can afford to migrate to isolated resort regions are likely to adjust well to their leisure environment.(10)

Work and careers may no longer be appropriate primary goals of some segments of the population, researchers have concluded, even among those who were conditioned to believe they were. The question of whether a worker's attitude towards his job influences his outlook towards retirement follows logically from these findings. In answer, a recent study of 244 Canadian subjects, both male and female, between 55 and 65, found that commitment to an occupation does not preclude a positive anticipation of retirement.(11) However, men with positive attitudes towards their occupations are less likely to want to retire than men holding negative views. By comparison, women holding jobs with high rewards, challenge, and variety as well as a positive attitude to employment indicated they are less likely to want to defer retirement. At the same time, older female industrial workers in England, according to a 1973 survey, are less enthusiastic about approaching retirement than their male counterparts.(12) Two studies conducted in the United States have confirmed that just prior to retirement women are less favourable towards it than men.(13) In addition, Schonfield and Hooper studied a small sample of women 65 years and older, some of whom were resident in nursing homes while some were recipients of the meals-on-wheels services, and others (a control group) lived in the community. Those in the dependent status had lower scores on successful aging than those living in the community.(14) Of course, the reason for the dependent status of some respondents was their inability to take care of themselves, and they were at the mercy of the care institutions, with all the attendant problems of dependency.

While ill health often accompanies retirement, and especially early retirement, a decline in health and retirement are not causally related according to recent studies.(15) A survey of 1,589 American males 65

years of age or older and representative of the non-institutionalized population found that the lower morale of retired men may be explained by poorer health, lower income, and more advanced age, but not simply by their retirement.(16) Morale during retirement seems to be a function of the expectations of retirement. Sometimes the recently retired use the "sick role" as a means of resuming social contacts and regaining social acceptability on the principle that illness is an accepted role in society whereas retirement often lacks a clear definition of expected behaviour.(17)

Two conflicting attitudes - a desire for retirement in general and regret that it is occurring to themselves - lead to certain inconsistencies in the findings. Respondents look forward to the leisure but not the old age that accompanies it. On the whole, financial considerations have the most profound impact upon attitudes towards retirement. The closer the prospect of retirement, moreover, the less desirable it seems. Social status and sex also colour one's view of retirement. But in general, people with rewarding employment tend to resist retirement; persons with middle occupational status tend to look forward to it; and people in lower occupational strata tend to favour it; though they fear the financial insecurity it brings.

LEISURE ACTIVITIES

The literature contains divergent views on the impact of retirement on participation in leisure activities, primarily over the question of who joins in and to what extent. Older cohorts, particularly from lower socio-economic classes, tended to underutilize the recreation services provided by various welfare and community groups. The explanation for this lies not simply in financial embarrassment, but also in deeply rooted attitudes towards leisure itself acquired during a lifetime of hard, routine work. Brought up in a culture that placed less emphasis upon formal education, where fifty hours of work a week were the norm and vacations were rare, the men could afford neither the time nor the money to develop extensive leisure activities during their working lives. Women among this cohort had low levels of overall schooling and were conditioned to housework and scrimping to provide necessities. Thus obligatory (or instrumental) activities, being both well-practised and more consistent with cultural values prevailing through much of their lives, may be preferred ways of spending time for many older people.(18) During their retirement, rather than make use of available recreation facilities, men tend to putter around the house and women to continue with their household tasks. However, new and growing evidence indicates that the relatively younger cohorts approaching and entering retirement regard it as an earned privilege, an attitude that frees them to pursue leisure activities.

Willingness to retire or advanced age does not seem to inhibit other activities, particularly voting. A 1976 study of Canadian politi-

cal behaviour found that those over 65 did not show any decline in voting participation or any slackening of interest in politics.(19) This and other similar studies suggest that "grey power" movements will probably proliferate as the older population grows as a proportion of the total population.

CANADIAN STUDIES ON RETIREMENT

Two major Canadian research projects dealing with retirement - one just completed and the second nearing completion - deserve special notice. In 1977 the Department of Health and Welfare reported on the attitudes towards and experience of a nationwide sample of retired or soon to be retired.(20) The Ontario Ministry of Community and Social Services launched a survey of a sample of Ontario workers in 1959, a unique longitudinal study of the aging process and its effect on health and social adjustment that is just now being completed. The study also focuses on various aspects of aging and perceptions of retirement.(21)

In February 1975 the Department of Health and Welfare surveyed 3,011 respondents aged 55 or older during the ongoing Labour Force Survey and received 2,418 usable responses representative of approximately 3.6 million civilian workers in ten provinces. Active men strongly favoured retirement before 65 (71 per cent) or at least at 65 (21 per cent), whereas only a minority (9 per cent) desired a retirement date beyond their sixty-fifth birthday. Among women still active in the labour force 77 per cent preferred retirement at or before age 60. A concern for personal health, particularly among men, determined attitudes towards the timing of retirement. Adequate retirement income was also cited as contributing to a desire for early retirement.

Attitudes towards both early and compulsory retirement are in the process of changing towards their more explicit acceptance.(22) The data in Table 1, taken from the Health and Welfare study, indicate that the preference for earlier retirement is now quite pronounced. Furthermore, over half the respondents supported the idea of compulsory retirement, although a strong minority of 30 per cent opposed it. The active respondents favoured compulsory retirement slightly more than those already retired. Assuming that pension benefits remained the same, 31 per cent of the male and 27 per cent of the female retirees would have retired sooner compared with 55 and 57 per cent, respectively, of those still in the labour force. Once again, income and health proved to be the key variables governing the timing and willingness to retire. Only 25 per cent of both active and retired respondents thought their retirement income adequate. Men appear to be more concerned with financial and health problems than women. Men gave health as the most frequent reason for early retirement, especially those who had worked in manual or lower skilled occupations, categories that are somewhat larger in these older cohorts than in the population as a whole.

Table 1
Proportion of Respondents Favouring Various Compulsory Retirement Ages

Age of retirement	Men		Women	
	Active	Retired	Active	Retired
	(Per cent)		(Per cent)	
50 or 60	45	59	54	62
65	29	23	27	23
70	12	8	10	5
Other	15	9	11	11
Total(a)	100	100	100	100

a Columns may not add to 100 because of rounding
Source Health and Welfare Canada, Retirement in Canada: Summary Report, Ottawa, 1977, p. 14.

Those approaching retirement or already retired seem least concerned about housing. About 70 per cent of the men and 63 per cent of the women surveyed owned their own homes; only 8 per cent of both sexes lived in rooming houses or senior citizen accommodation, although Labour Force Survey sampling techniques may under-represent the latter. The retired population engaged in about the same kinds of leisure activities - visiting friends, exercising, or working at hobbies - as the active population, but in later years lighter activities replaced energetic ones.

In summary, the Department of Health and Welfare study concluded that health and income considerations, while not the only concerns, were the major determinants of retirement. Moreover, health and income also seem to be positively related - the higher the income the better the health of the worker and vice versa. These findings are necessarily based upon the occupational patterns in the past. Since the occupational structure has been shifting away from manual, unskilled jobs towards higher-paid skilled and semi-skilled jobs requiring considerable formal education, we might expect a healthier, more financially secure retired population in the years ahead.

Although Ontario's long-term study of aging begun in 1959 terminated only recently and the final results are not yet available, it has produced a number of quite striking preliminary results. Initially the study followed a cohort of 2,000 45-year-old males representative of the spectrum of occupations in the province, interviewing them each year to observe changes in lifestyle, health, income, employment and leisure experiences, and attitudes towards the adequacy of public services for middle-aged and older citizens. During the final year 1,100 of the original group were still participating in the survey, the others having dropped out by virtue of death, out migration, or loss of interest.(23) Investigators first measured the demographic and occupational characteristics of the group and then turned to an examination of its interest in leisure and retirement. Preliminary findings confirm earlier reports

that with increasing incomes and decreasing parental responsibilities the respondents became more socially active and devoted more time to leisure.(24)

By the time the men surveyed reached their mid-fifties, their activity patterns seemed to stabilize. However, an increasing proportion of those with low incomes reported decreased activity. White collar workers stayed in better health, remained more interested in social activities, and rated their life satisfaction higher than blue collar workers, a result that again echoed conclusions drawn from studies done elsewhere.

The Ontario study also uncovered the polarized attitudes towards retirement noted by other researchers. "Those with higher incomes and more education look forward to the end of work with interest and hope; those with little education and lower incomes think the worker should be permitted to continue in employment as long as he can work."(25) A fear of isolation and the loss of a daily routine provoke the greatest apprehension. Some of the anxieties upon approaching retirement stem from a belief that retirement income will be insufficient to sustain established social or leisure activities for which disposable income is necessary. Plainly, inflation has the retired and soon-to-be retired worried. The questionnaire administered during the twentieth and last year of the survey probes attitudes towards and experiences of retirement in detail, but the results will not be known for some time.

AGING, RETIREMENT, AND PENSIONS

While the literature on retirement and pensions is not as extensive as that on aging, it too has mushroomed during the last decade or so. The relationship between aging and retirement is discussed essentially in terms of two independent processes in society: aging and the division of labour. The biological process of aging and the progressive inability of older people to participate effectively in the labour force creates pressure to find ways that they may retire after a certain age. This time varies in different societies and circumstances but is usually between the ages of 60 and 65.(26) The division of labour, characteristic of advanced societies like Canada, means that work and production are rationally organized and that traditionally personnel progress upwardly through the ranks. In order that younger people may advance, older people must retire either at a fixed age or after a fixed number of years of employment.

Historically, biology and the division of labour were "naturally" intertwined, and a person might work as long as he or she was able. However, as industrialization proceeded and labour became infinitely divided in industrial society, employment concerns assumed overriding importance. Retirement then became increasingly significant, despite the biological delay in aging; it began to be thought of as the threshold

between working life and aging. Efforts were made to help workers cope with retirement, and both management and labour unions tried to find ways to retire the old earlier and to increase the number of years spent in retirement.

Biological aging has, of course, been delayed as healthier people live longer. The discrepancy between biological aging and the age of retirement has begun to be noticed and work is beginning to be seen as a temporary stage in life.(27) Thus the emphasis shifted from thinking of retirement as a reward at the end of working life to considering it an opportunity that may be seized at the earliest age transfer payments may be claimed. Retirement as a social institution implies "a right to an income without holding a job."(28) Because of past performance, the retired person receives a pre-specified sum of money in lieu of salary.

CONCLUSION

In the literature, differing emphases on the interpretation of aging has produced two seemingly different theories about approaches to aging: one maintains that individuals may enter into a process of disengagement and that retirement may mark a major threshold; the other contends that an aging person may remain active but substitute new activities for old ones. No doubt physical and mental health are crucial variables that may explain the differences in findings in the various studies considered. The overall health level of the population is projected to improve, allowing those well past current retirement age to remain physically and socially active. Indeed, the increasing number of aged who are healthy and articulate is expected to have a significant impact on future politics.

If one were to look for a consensus in the literature on aging, the notion of continuity in lifestyles and interests would, perhaps, be the most central one. Given the anticipated changes in the occupational structure of today's labour force, active lifestyles are likely to prevail well before the end of this century. But expressive lifestyles require more disposable income than is available to a majority of today's aged. They may still putter around the house, or fix things, or just do nothing - all activities that cost little but are congruent with their past lives. This behaviour pattern is, however, bound to change as population cohorts who have experienced the affluence of the post Second World War era reach retirement age.

The literature on retirement seems to agree that preferences run towards early retirement, although they are tempered by concern about satisfactory income levels which is reinforced in the face of persistent inflation. However, those retiring now, perhaps because they may have grown up in a cultural milieu favouring a traditional work ethic, seem to accept early retirement only in the case of ill health. Thus, those who have retired early have done so for health reasons, even when they

were not in a financial position to retire comfortably. Women are more likely to retire early than men, even though a few studies indicate that their preferences are the contrary. In all probability the vagaries of the labour market force women to retire earlier than men.

All in all, retirement has become a social institution that is taken for granted even though its financing may be little understood. Retirement and associated pensions have become a matter of right and entitlement. The current labour force cohorts entering or about to enter retirement have had arduous working careers during a time when work was considered not only necesary but also morally imperative; they believe their pensions are a just reward for their service. The new cohorts just starting their working careers are reportedly less sanguine about the inherent virtue of work, but their perceptions of pensions as deferred wages and as a general government obligation may already be deeply ingrained. When these groups reach retirement age some thirty or so years hence, their political weight will be considerable and their anticipation of satisfactory pensions perhaps a divisive issue. Thus all the indicators point towards increased pressure for income maintenance into retirement to support a continuity of lifestyles. How that income should be generated and how the pension should be funded remain questions yet to be answered.

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The Demography of Older Canadians

Daniel Kubat

July 19, 1978

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CHARACTERISTICS OF OLDER CANADIANS

The Commission has before it a number of documents dealing with the demographic composition of Canadians, particularly those of retirement age. This report will summarize the few demographic facts relevant to the argument for a flexible retirement age. The proportion of the older population in Canada is increasing even though, comparatively speaking, Canada is very much "behind" some countries in Europe, for instance the United Kingdom, Sweden, and the Netherlands, as regards the proportion of their population past the sixty-fifth birthday.

Distribution by Age

The proportion of persons over 65 years of age is not only increasing, but will continue to increase. The distribution within the older groups is such that those well past their three score and ten represent a significant proportion of the aged in this country. The relative position of older women within the older group has improved considerably during the last twenty-five years and there is a fair chance that it will improve even further (Table 1). In 1976 all women 80 years and over represented over 21 per cent of women in the older age groups compared to slightly over 17 per cent at the time of the 1961 census. The position of males improved over a longer span, from over 12 per cent in 1951 to close to 18 per cent in 1976, even though older men registered a relative decline in the census years preceding 1976. This anomaly is attributed primarily to males immigrating to Canada after the turn of this century who have started to die out, thus "normalizing" the age composition in favour of women.

Distribution by Marital Status

Women are favoured in survivorship, that is, they live longer than men. This fact is reflected in the marriage rates of the older population (Table 2). The number of married males 65 years of age or over has increased from 68.5 per cent to 74 per cent in only 15 years whereas the proportion of women who remain married has slightly decreased. This indicates, again, the "normalization" of the Canadian age and sex structure. Marriedness contributes to survivorship of males in particular. One may expect that the survivorship of very old males will improve, since a higher proportion of them are married now than previously.

Distribution by Residential Mobility

Another factor contributing to survivorship is stability of one's environment. Data suggest that mortality and morbidity increase soon after relocation. Unfortunately, most very old persons are eventually relocated into institutions offering medical and nursing care; but until that time, they live in their familiar surroundings. Thus far, about three-fourths of all aged in Canada owned their housing (Canadian Council on Social Development, 1977), especially if they lived as couples.

Table 1
Older Population in Canada, by Proportion in Older Age Groups, by Sex, For Census years Since 1951

			Proportion in age groups					
		All 65+	65-69	70-74	75-79	80-84	85-89	90+
		(Number)			(Per cent)			
1976	M	875,395	38.7	27.6	17.2	9.7	4.8	2.1
	F	1,126,935	33.9	25.9	18.8	12.0	6.3	3.0
1971	M	781,865	37.9	26.3	17.9	11.0	5.2	1.8
	F	962,540	33.7	26.2	19.3	12.3	6.2	2.4
1966	M	716,536	35.6	27.8	19.4	11.3	4.6	1.4
	F	822,992	33.6	27.8	19.6	11.7	5.3	2.0
1961	M	674,117	35.6	29.1	19.9	10.2	4.0	1.2
	F	717,036	34.5	28.7	19.5	10.9	4.7	1.7
1956	M	622,210	38.2	30.1	18.3	8.9	3.5	1.0
	F	621,728	36.4	29.5	18.3	9.9	4.3	1.6
1951	M	551,303	41.4	29.1	17.1	8.3	3.2	.9
	F	534,970	38.4	28.9	17.6	9.5	4.1	1.4

Sources Statistics Canada, Census of Canada, 1971, Cat. 92-715 (Bulletin 1.2-3).
Statistics Canada, Census of Canada, 1976, Cat. 92-825 (Bulletin 2.6).

Table 2
Older Population in Canada by Proportion Married in Each Age Group, by Sex, for Census Years Since 1961

	1976		1971		1961	
	M	F	M	F	M	F
			(Per cent)			
65 and over(a)	74.0	39.0	71.8	39.2	68.5	41.2
65-69	82.3	56.0	80.4	55.2	77.5	53.4
70-74	77.3	42.3	77.7	47.0	72.0	44.2
75-79	70.1	30.0	68.5	31.0	63.7	32.7
80-84	60.4	18.8	52.0	20.1	52.4	21.5
85-89	47.8	10.2	47.8	12.8	40.2	16.1
90 and over	31.9	6.3	34.3	8.2	28.4	7.3

a For numbers see Table 1.

Sources Statistics Canada, Census of Canada, 1976, Cat. 92-825 (Bulletin 2.6).
Statistics Canada, Census of Canada, 1971, Cat. 92-730 (Bulletin 1.4-2).
Statistics Canada, Census of Canada, 1961, Cat. 91-552 (Bulletin 1.3-1).

Recent data on migration indicates a slight decrease in residential stability of older persons. Males are more stable than females, a situation reflecting some relocation on the part of widowed females. In 1976, 71 per cent of males and about 67 per cent of females were enumerated in the same dwellings they had occupied five years before. Both figures represent a slight decrease compared to the 1961 census (Table 3). However, inasmuch as residential mobility is also a sign of better health and a willingness to experiment, one may assume that the decrease in residential continuity, slight as it was, represented retirement moves, quite often far away, or at least to a different municipality.

Table 3
Older Population in Canada, by Proportion Changing Residence(a), by Sex, for Census Years Since 1961

	Population	Movers					
	65+	Non-movers	Same municipality	Same province	Different province	From abroad	Not stated
	(Number)	(Per cent)					
1976 M	875,395	71.1	15.8	9.1	1.6	1.2	1.3
F	1,126,935	67.5	19.3	8.6	1.7	1.4	1.6
1971 M	781,865	70.1	17.7	8.4	1.7	1.2	1.1
F	962,542	67.1	20.0	8.3	1.7	1.6	1.2
1961 M	622,791(b)	73.9	16.6	7.4	1.4	.6	.1
F	658,220(b)	71.4	18.5	7.5	1.5	1.0	.1

a One or more moves within the five years preceding the census date.
b Based on a 20 per cent sample of the census population. The actual number of persons aged 65+ in 1961 was 679,117 for males and 717,036 for females.

Sources Statistics Canada, Census of Canada, 1961, Cat. 98-509 (Bulletin 4.1-9).
Statistics Canada, Census of Canada, 1971, Cat. 92-119 (Bulletin 1.2-7).
Statistics Canada, Census of Canada, 1976.

Distribution by Place of Birth

Recent data on older Canadians by their place of birth indicate that a substantial proportion of the population was foreign born (Table 4). Males who entered Canada around the turn of this century and later are now reaching an age at which they are dying off. Unfortunately, the 1976 census did not ask the place of birth. The decrease in the proportion of foreign born registered at the time of the 1971 census "normalizes" the population in the sense that it removes the surplus of males characterizing the older Canadian population. The implications of the change in the proportion of foreign born are as follows: even though

immigrants in the past were a hardy stock as it were, survivorship of the native born population was always slightly higher. This may have been partly a function of occupational selection for immigration only, of course, for the historical immigration pattern. Very recent immigrants are screened as to their health and education which should assure them at least as much longevity as the native born. Admittedly, longevity is very much a function of genetic endowment, comparative data on which are lacking. It is likely that the proportion of foreign born among the aged, let us say by the year 2020, will be substantially lower than it is today and therefore its effect on the survivorship of the whole population is not too important.

Table 4
Older Population in Canada, by Proportion Born in Canada, by Sex and Age Groups, for Census Years Since 1961(a)

		Proportion in age groups						
		65+	65-69	70-74	75-79	80-84	85-89	90+
					(Per cent)			
1971	M	62.0	63.7	61.6	61.3	59.6	58.5	63.3
	F	64.7	66.4	63.8	63.7	63.5	63.9	67.7
1961	M	59.1	61.0	57.4	56.5	59.9	62.9	64.8
	F	63.2	63.7	62.1	61.8	64.5	67.4	69.8

a The question was not asked during the 1976 census.

Sources Statistics Canada, Census of Canada, 1961, Cat. 92-555 (Bulletin 1.3-4).
Statistics Canada, Census of Canada, 1971, Cat. 92-737 (Bulletin 1.4-9).

Prognosis

Not only will the proportion of persons 65 years of age and older increase as compared to the total population but, and primarily, a considerable redistribution will occur among the aged; a greater number of them will be living to higher ages. Concern has been expressed with the proportion of the aged over 65 strongly affecting dependency ratios. However, it is more crucial to focus one's attention on the distribution of the population within the older age groups, as this distribution will influence the demand on pension funds.

One measure of the length of pension payment dependency is the number of years a person of a given age is expected to live. Such values are obtained from the life tables. For instance, in 1951, males in Canada could expect to live an additional 13 years and females an additional 15 years after reaching their 65th birthday. In 1966, the respective numbers increased to close to 14 and 17 years. In 1971, the last year for which such data are available, the respective values re-

mained the same for males but increased by about half a year for women. A life expectancy of an additional ten years was attributed to males near their 71st birthday and to females near their 76th birthday. "Normal" populations in countries industrially similar to Canada exhibit a narrower range between male and female survivorship. Females would still have a life expectancy of ten years (Ryder, 1975) shortly after their 74th birthday and men shortly after their 72nd birthday. The most recent life tables for the United States, for 1975, the white population indicate that males have a life expectancy of ten years shortly before their 72nd birthday and females shortly after their 76th birthday.

Another way to measure the length of pension payments dependency is to calculate the proportion of any given birth cohort still surviving today. Due to heavy immigration in the past, however, such a measure for Canada is considerably distorted. Rough calculations for 1976 indicate the following results:

Table 5
Proportion Surviving of Selected Age Groups

Age groups in 1976	Age group 0-4 at the time of birth of today's age group	Proportion surviving
	(Number)	(Per cent)
65-69	720,815	81
70-74	533,725	69
75-79	362,705	56
80-84	220,568	38
85-89	112,375	18

Source Statistics Canada, Census of Canada, 1976, Cat. 92-825 (Bulletin 2.6); Urquhart and Buckley, 1965.

Calculating similar values for the preceding census becomes less rewarding, since the interplay of migration and mortality disallows any statistically valid conclusions. The age group 65-69 in 1971 had a cohort survivor proportion of 81 per cent; for the year 1961, it was 78 per cent; and for the year 1951, it was 72 per cent. The increasing survivorship represents, in the first place, an improvement of mortality; only secondarily does it reflect added population through immigration. During the years of the heaviest immigration to Canada, just before World War I, emigration was almost as heavy as immigration. Nonetheless, the populations at advanced ages are larger by far than anticipated when the various pension plans were coming into existence. There is also some indication that even without a major medical breakthrough, the inching up of survivorship will cause the upcoming age cohorts to remain much unreduced until very high ages.

MORTALITY OF OLDER CANADIANS

Official population projections from Statistics Canada or from the Department of Insurance which supplies population projections for the CPP, are conservative. There are two reasons for this: the projections are bounded by historical trends; and governmental agencies are not at liberty to speculate on the future. Therefore, they assume constant values past the normally projected trends of fifteen years. In the past, projections dealing with demographic phenomena have been invariably wrong in the long run and often in the short run as well.

Mortality projections are subject to the least fluctuations and, correspondingly, to the least number of errors. The projections by Statistics Canada (1975) assume only slight improvement in Canadian mortality for the years ahead. The population projections now being prepared for the Economic Council of Canada by the McMaster Group use three possible changes in Canadian mortality, producing high, medium, and low projections based on the trends for mortality decline between 1951 and 1971.

The "low" projections produce life expectancies at birth for males in 1976 of 70.1 and in 2011 of 73.0. For females the corresponding values for those years are 77.9 and 85.3. It should be noted that the "low" projections refer to the corresponding low fertility. High fertility carries with it high infant mortality and thus depresses life expectancy values at birth. Life table values for the U.S. white population for 1975 indicate male and female life expectancies at birth at 69.4 and 77.2 respectively, approximating the projected values by the McMaster Group for Canada in 1976 and for their "medium" projections. If the projections come true, then the population in Canada will show high survivorship rates, going well above ten years after the pensionable age of 65.

Canadian mortality has been dropping substantially for females in the older age groups. For instance, the mortality rate for women aged 80-84 declined 33.4 per cent between 1950 and 1976 whereas male mortality in the same age group declined only by 10.6 per cent, that is less than one-half per cent annually (Table 6). Comparing the actual mortality rates in 1976 with those projected by Statistics Canada from the 1965-1969 data base (Tables 7 and 8) for deaths by all causes, the decline in mortality realized in 1976 seems to have proceeded faster than the decline projected by Statistics Canada to the years 1985-1989 from trends occurring in the periods 1955-1959 and 1965-1969. For instance, males 65 to 69 were projected to suffer a slightly higher mortality in the late 1980s, but their actual mortality experience in 1976 represented a drop of about 9 per cent as compared to the base data for 1965-1969. Other older age groups show a similarly accelerated drop in mortality. This applies also to the mortality of older women. By 1976, those between ages 75 and 79 already experienced 61 per cent of the 38 per cent drop projected for the years 1985-89. Caution is necessary in

interpreting these data, as the 1976 mortality data are for one year only while the projections are based on four-year averages.

Table 6
Mortality Rates of Older Canadians, by Age Groups and Sex, Since 1950

		Age groups (rate per 1,000 population)					
		All ages	65-69	70-74	75-79	80-84	85+
				(Per cent)			
1950	Male	10.1	36.4	54.9	84.7	132.2	222.9
1960		9.0	35.0	54.3	83.2	128.5	217.5
1970		8.5	36.3	53.3	78.2	119.7	197.0
1971		8.5	34.7	51.9	79.0	118.8	198.6
1972		8.7	35.7	53.4	78.9	122.7	213.9
1973		8.6	34.7	52.0	79.6	121.9	218.5
1974		8.6	34.9	53.1	78.3	121.5	217.0
1975		8.5	34.4	51.4	77.2	120.1	221.7
1976		8.4	33.3	51.4	77.3	118.2	195.8
1950	Female	7.9	26.4	42.8	69.9	115.3	209.1
1960		6.6	21.3	35.1	60.8	104.1	199.6
1970		6.1	18.3	29.4	48.7	83.9	163.7
1971		6.1	17.3	28.3	48.1	82.4	163.3
1972		6.2	17.7	29.1	48.3	80.8	158.6
1973		6.2	16.9	28.0	47.8	80.8	157.0
1974		6.3	17.3	28.1	46.7	81.3	156.3
1975(a)		6.2	17.3	27.8	45.5	77.3	149.7
1976(a)		6.1	16.4	26.3	44.7	76.8	154.7

a Estimated.

Sources Statistics Canada, Vital Statistics 1975, Vol. III: Deaths, Cat. 84-206; Causes of Death, 1976, Cat. 84-203.

Trends in Mortality Into the 1980s

Looking at the changes in Canadian mortality for the older population and by major causes of death, mamely diseases of the circulatory system and of the respiratory system, and deaths due to neoplasms, the trends in mortality appear to be unclear (Table 7). Most of the projections for the years 1975-1979 seem to be lower than the rates of mortality recorded in 1976 for diseases of the circulatory system. This seems to apply to both sexes. However, the differences may be explained by the fact that quite different classification systems were adopted for the 1976 data than for the 1965-1969 data. The latter were classified by the Seventh Revision of the International Classification of Diseases, whereas the present Canadian mortality data are recorded since 1970 according to the Eighth Revision of the International Classification of Diseases. The same concern applies to the data shown for the diseases of the respiratory system and for neoplasms. An interpretation which

explains apparent differences by differences in classification is bolstered by the previously described de facto decreases for all causes of death as registered in 1976.

Table 7
Mortality of Older Canadians: Actual and Projected Rates Between 1955-1959 to 1985-1989

		Actual rate (per 100,000 population			Projected	Lowest rate recorded in province during
		1955-1959	1965-1969	1976(a)	1985-1989	1968-1970
65-69	Male	3,604.3	3,650.8	3,326.6	3,684.0	2,820.0
70-74		5,310.2	5,267.5	5,138.3	5,175.8	4,300.0
75-79		8,264.2	8,012.0	7,733.2	7,579.6	6,780.0
80-84		13,248.3	12,367.5	11,822.9	11,177.9	9,950.0
85+		22,713.9	21,220.3	19,575.5	21,059.3	18,520.0
65-69	Female	2,255.5	2,326.9	1,644.5	1,622.8	1,480.0
70-74		3,624.4	3,543.0	2,630.0	2,274.8	2,240.0
75-79		6,376.5	5,853.2	4,470.6	3,626.8	3,880.0
80-84		10,685.4	9,954.5	7,680.9	7,119.6	7,660.0
85+		22,302.3	19,010.5	15,469.9	17,087.4	15,620.0

a Data after the projections based on 1965-1969 data were made.

Source Statistics Canada, Technical Report on Population Projections for Canada and the Provinces 1972-2001, Cat. 91-516, Table 4.7; Causes of Death, 1976, Cat. 84-203.

Built-in Difficulties with Demographic Projections

The examples of mortality projections just described illustrate the difficulties demographers face when their projections are put to the test, even only a few years later, and the expected and actual data disagree. Whereas it is crucial to have fixed values when calculating future funding requirements for pensions, all assumptions about trends extending into the future are self-defeating. This is particularly so since the crucial variables of the length of life and of the proportion surviving are open to fluctuations. The fluctuations are more likely than not to move upwards unless unlikely policy reversals in medical care take place. Given few if any alternatives, the extant projections as developed by Statistics Canada, for instance, will do. In other words, the shorter the time span of a projection, the less will be the likelihood of error.

Table 8
Mortality of Older Candians, by Three Major Causes of Death, by Age Groups and Sex: Actual and Projected, Between 1965-1969 and 1985-1989

Diseases by age groups and sex		Actual rate 1965-1969	Actual rate 1976(b)	Projected rate(a) 1975-1979	Projected rate(a) 1985-1989
		(Rate per 100,000 population)			
Circulatory diseases					
65-69	M	1,725	1,728	1,710	1,694
	F	852	785	773	701
70-74	M	2,508	2,753	2,453	2,399
	F	1,380	1,447	1,166	896
75-79	M	3,826	4,304	3,726	3,629
	F	2,509	2,709	2,077	1,722
80-84	M	5,964	6,974	5,648	5,349
	F	4,614	5,020	4,055	3,565
85+	M	10,709	12,219	9,424	8,293
	F	10,641	10,681	10,503	10,366
Respiratory diseases					
65-69	M	237	245	320	432
	F	70	80	66	66
70-74	M	376	445	506	681
	F	124	138	117	110
75-79	M	619	773	758	929
	F	237	254	196	161
80-84	M	1,051	1,307	1,078	1,321
	F	512	528	416	338
85+	M	2,642	2,595	3,942	5,882
	F	1,355	1,389	503	503
Neoplasms					
65-69	M	883	890	1,012	1,186
	F				
70-74	M	1,143	1,306	1,302	1,483
	F				
75-79	M	1,508	1,705	1,639	1,781
	F				
80-84	M	1,950	2,171	2,077	2,212
	F				
85+	M	2,346	2,338	3,329	4,724

a Based on the actual rate 1965-1969 and a number of trend assumptions.
b Rate computed for a single year. It demonstrates the difficulty of projections. The classification of diseases deviates somewhat from that on which the projections were based: ICD Seventh Revision. The 1976 classification is that of ICDA, Eighth Revision.

Source Statistics Canada, Technical Report on Population Projections for Canada and the Provinces, 1972-2001, Cat. 91-516, Table 4.15, 4.18, 4.19; Causes of Death, 1976, Cat. 84-203.

The recent reports in mass media on the plight of the aged suggest that a good proportion of older persons are weak in body, uncertain of mind, and are occupying most of the hospital beds in the country. When the present young adult generation reaches retirement in forty to fifty years, so the story goes, all health care programs will be overburdened with arthritic senior citizens. The truth is, the data give cause for optimism.

Hospitalization

Over the last six years there was some increase in utilization of hospital facilities. For males between 65 and 74 the number of hospital separations (that is number of cases, not persons, leaving the hospital, including deaths) has increased by about 6 per cent beteen the years 1969 and 1975; for men older than 75 years the increase was 15 per cent. For women in the same age category the increase was 6 and 7 per cent respectively. During the same six-year period, the number of days for each stay in the hospital remained about the same for the younger group but increased by about one day for the older group. On the other hand, the average number of days in hospital per person in the corresponding age and sex group declined by about three days for the younger group and remained the same for persons over 75 years of age (Table 9). These slight changes for the better may be interpreted to mean a better utilization of hospital services by the aged, a more efficient provision of medical care by the hospitals, and in the case of separations, a slight increase in deaths in hospital over those at home or in various caretaker institutions. In any case, slightly fewer than one-third of males between the ages of 65 and 74 and less than one-fourth of females in the same age group use the hospital services annually, an indicator not too much higher than the average health experience of the adult population.

The decrease in stay in institutions for mentally ill and retarded was quite dramatic for the years between 1964 and 1974. The number of older Canadians between the ages of 65 and 69 in institutions was about halved during the period, from 777 to 373 per 100,000 population. For those 80 years and older, the same reduction occurred. An explanation for this dramatic decline lies in changes of treatment with the introduction of chemotherapy, and in a greater effort on the part of mental health institutions towards treatment and away from custodial care. In any case, the number of persons involved is quite small, about one-half of 1 per cent of all aged (Table 10).

Prognosis

In the area of health care, the advances thus far have been tremendous. As the general health care policies become refined to emphasize prevention, and the understanding of epidemiological issues increases the effectiveness of medical coverage, one may expect that public health

Table 9
Morbidity of Older Canadians: Stay in Hospitals, by Age Group and Sex, Between 1969 and 1975

		1975	1974	1973	1972	1971	1970	1969
					(Per 100,000 population)			
Separations(a)								
65-74	M	32,644	32,824	32,445	32,245	30,907	30,686	29,753
	F	25,584	25,787	25,300	25,394	24,834	24,980	24,181
75+	M	50,471	50,789	50,691	49,817	46,710	45,511	43,777
	F	36,874	37,364	37,106	36,636	35,958	35,670	34,557
Average stay(b)					(days per stay)			
65-74	M	5.9	6.0	6.1	6.1	6.1	6.7	6.1
	F	5.1	5.4	5.2	5.5	5.3	5.5	5.4
75+	M	13.6	13.8	13.6	13.6	12.6	12.5	11.9
	F	13.2	13.4	12.7	12.8	12.3	12.5	12.2
Days per person(c)					(in age group)			
65-74	M	18.0	18.4	18.7	19.0	17.9	20.1	20.5
	F	19.9	20.6	20.6	21.6	21.5	22.2	22.2
75+	M	27.0	27.1	26.9	27.2	26.9	27.4	27.2
	F	35.8	35.8	34.3	34.9	34.3	35.0	35.2

a Separations: discharge or death; the numbers represent number of cases, not persons.
b Average stay: days per each separation.
c Days per person: number of days per person in the corresponding sex and age group.

Source Statistics Canada, Hospital Morbidity, Canadian Diagnostic List, Cat. 82-209, Annual.

measures will have a positive effect on older persons' health. Primarily, however, as the younger cohorts born and raised after World War II reach late adulthood and old age, their attitudes as users of health services will illustrate a better understanding of their bodies and their health needs. One may therefore expect a healthier population in the years to come.

Table 10
Morbidity of Older Canadians: Patients in Mental Institutions Between 1965 and 1974(a)

	Patients by age group (per 100,000 population)		
	60-69	70-79	80+
1965	777	849	1,219
1966	709	769	1,118
1967	662	712	1,051
1968	605	660	990
1969	572	629	945
1970	514	574	889
1971	484	561	813
1972	451	518	747
1973	398	484	650
1974	373	460	614

a Last year for which data were available.

Source Statistics Canada, Mental Health Statistics, Vol. II, Patients on Books in Institutions, 1970-1974, Cat. 83-208.

IMPLICATIONS OF THE DEMOGRAPHIC INDICATORS FOR THE SURVIVORSHIP RATE

The main purpose of this report was to show that the older population has a better chance of survivorship than the preceding populations. The host of studies available to the Commission all stress that the proportion of the aged will increase, and with it the dependency burden in the years to come and, in particular, early in the next century. The various studies and reports argue, quite correctly, that the shape of the age and sex pyramid of th Canadian population is undergoing and will undergo dramatic changes, since fertility has declined and conceivably may remain quite low. Such a situation will have an effect of the proportion of the aged in the population only insofar as one assumes certain traditional cut-off points such as the sixth-fifth birthday. On the other hand, were one to compute dependency ratios using the number of persons 70 years old or older in the numerator and those 20 to 70 years old in the demoninator, the old age dependency ratio today would not be much different from that defined, more traditionally in 1929;

that is it would be about 9 aged males per 100 male population of the labour force age defined as 20 to 70 years of age. Such a dependency ratio would not exceed 14 by the year 2035 (Department of Insurance projections for the CPP) and might decline thereafter. The dependency ratio would be somewhat higher for women.

It is crucial to bear in mind that populations approximating a perfect survivorship model will have a substantial impact on the funding requirement for pensions. In other words, if the trends suggested in this report are to continue, Canada will have population which is not only long-lived, but in which (and this is of utmost importance) the longevity is evenly distributed to all. Traditional survivorship patterns encouraged the present system of funding the pensions: a sort of chain letter principle, which is predicated on the disparate size of the base population (the payers) and the early entrants into the chain (the payees). With the modern changes in growth levels (zero growth) and survivorship (homogenous mortality), a new design for pension funding is required.

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Canadian Occupational Structures: Expected Changes

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June 28, 1978

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CHANGES IN THE CANADIAN OCCUPATIONAL STRUCTURE

Each time the decennial census was taken in the last fifty years or so, the changes in the content of enumerated jobs were sufficient to warrant creating new job description categories. Basically, there are two major criteria for describing the Canadian labour force: the area of work, for instance extractive industries or financial establishments, and the level of work, for instance skilled labour or management.

Changes Through 1971

The classification of work performed in the economic sectors in which people work is ceding its importance to the classification of the level of competence at which workers perform their jobs. This is reflected in the increasing proportion of non-manual occupations representing now close to one-half of the Canadian labour force. During this century, the major switchover was from the primary sector employment, primarily in agriculture, to the tertiary sector of employment; there was a slight increase in the secondary sector, primarily in manufacturing. For instance, in 1911, agriculture accounted for about 40 per cent of the male labour force but in 1971 it accounted for only close to 9 per cent of the male labour force. Professional, managerial, and clerical male labour force in 1971 accounted for over 30 per cent of the labour force, but in 1941 it accounted for somewhat over 15 per cent of the Canadian labour force.

Concomitant to the social change affecting the composition of the labour force is the increased inclusion of women in the labour force. In 1911, only about 16 per cent of all women 15 years of age or older were gainfully employed (the acknowledgement of women in agriculture did not take place until the 1951 census); in 1971 the proportion rose to 37 per cent. The major switch for women was out of the service occupations in particular personal service, they held fifty years ago, into clerical and professional occupations in which close to 50 per cent of the female labour force were enumerated in the 1971 census (Kubat and Thornton, 1974: 135-167).

Occupational Prestige

All societies value differentially work performed and, at the same time, all societies seem to agree on categories of work which are valued highly and on categories of work which are viewed as demeaning. Industrial societies are characterized by a very complex occupational structure but, within its complexity, the ranking of occupations is fairly similar from society to society. Basically, the ranking is the result of the composite of talent and the need to get the work done. The higher the talent required for a job and the more important the job is in terms of its impact of the societal organization, the higher the prestige of such an occupation. In Canada, the "knowledge" workers who also occupy positions of administrative responsibility, for instance

university presidents, appear to earn high prestige (Blishen and McRoberts, 1976). There is a substantial sociological literature on occupational distribution of the labour force. The literature is tied to the concern with social change, in particular, the concern relative to social stratification and mobility, that is to the allocation of jobs to population (Tepperman, 1975). Thus far, the Canadian labour force experienced an upward mobility; the chances for the son to do better than his father in terms of holding a "better" job were fairly good. This was possible by a structural change of the occupational structure whereby new jobs being created were disproportionately in "higher" occupational categories of non-manual employment, accompanied by improved pay and working conditions.

The result of the expansion of the labour force, partially through the growth of population (natural increase and immigration) and through the increasing labour force participation of the population (decrease in mortality in the adult population and entrance of women into the labour market) is a greater complexity of tasks to be performed. There are now well over 20,000 job classifications in Canada (Statistics Canada, 1971; Dominion Bureau of Canada, 1971). The prestige and desirability of some of the jobs are known and acknowledged and, the means to qualify for even exalted occupations are available to a greater proportion of the population than ever before and than there are actual positions available. This situation produces certain pressures which will affect the future occupational structure in Canada. The prestige of non-manual occupations operates through a trickle effect, parallelling the spread of fashions. "Cheap" versions of high fashion become widely available and also desirable. Thus, in the occupational aspiration schema, job holders would like their jobs to look like high prestige jobs. Many such jobs can be upgraded in their image even though their content does not change.

Labour Force Mobility

Labour force mobility is likely to increase with the realization of one's substantial longevity through the redefinition of one's job as a career. Some of the mobility reflecting early retirement of the older worker is a function of technological obsolescene (Baum, 1974); mobility of the younger workers is a function of their job seeking behaviour and passing through their family life cycle (Economic Council of Canada, 1976). Until now, the "fruits" of early job mobility resulted in a deprivation of potential private pensions and encouraged those affected to work past their legal retirement age. A study of CPP contributors covering the years 1968 through 1972 in four regions in Canada (Quebec excluded), showed that "between half and three-quarters of male and female workers aged 25 to 44 had changed employers at least once." (Economic Council of Canada, 1976: 90). Canadians show a fair amount of worker mobility which is not likely to decrease over time. More likely than not, job changes will continue to increase, as the basic needs of income security are being met through various insurance type

arrangements (guaranteed income, unemployment insurance, etc.) and through a combination of earners into one household.

Expected Changes into the Future

The literature on the future of modern societies is formidable. The literature in the social sciences is dominated by views articulated by Daniel Bell (1973). His post-industrial society is expected to have an occupational structure, the beginnings of which are noticeable now. The tertiary sector will gain primacy within which "the knowledge workers," as Peter Drucker calls them, will play the main role. Social change does not occur, however, unless the preconditions are already there; the recent changes in the Canadian occupational structure towards service and professional employment will no doubt continue into the future. These changes have a number of implications for the composition and behaviour of the future labour force:

1. The new modes of employment presuppose a formal educational training which, indeed, is now available to the young cohorts of population.

2. The widespread access to and utilization of formal educational institutions produce population sufficiently informed about the mechanics of acquiring knowledge even though the individual ability to demonstrate their knowledge may and does differ.

3. The universally high level of formal education combined with the universally accessible information via the mass media essentially demystify "high learning" and the attendant prestige distribution of occupations. That is, occupations such as physicians or supreme court judges lose to managers and corporation directors in terms of the highest prestige awarded. In other words, organized corporate entities win out over individual achievers. Inasmuch as incumbents of controlling positions in corporate bodies (university presidents, financial institutions directors) are subject to an essentially political review, which, in turn, is informed by societal goals more than by pure economic considerations, then the review by peers prevails. The review by peers, for a long time characteristic of the scientific community, becomes the central mode of operation of any professional and by extension occupational group. This ethos of science is crucial to any self-regulating commune. The changes outlined will produce a labour force which will be well trained in terms of formal education received. Not all the education received will be directly applicable to their jobs. The effect of the formal education will be a decreased emphasis on direct supervision on the job and a greater feeling of equality among the members of any occupational group. The rewards will go to those able to organize effectively, either politically or administratively, other people and production of

goods and services. However, the tenure of the organizers may be limited and subject to continuous review. The trend toward the tertiary and even quaternary sectors of the economy will mean that the overall worker productivity as measured by the number of all employed and the GNP per worker will decline and the whole economy will become bimodal in terms of a highly productive primary and secondary sectors which are capital intensive and less "productive" tertiary and quaternary sectors which are labour intensive. It is the labour intensive sectors of the economy which will be modal for the behaviour of the labour force and will have an impact on labour force participation in the future, forcing it.

LABOUR FORCE PARTICIPATION RATES

The numerical values for labour force participation rates reflect the definitions under which such data are collected. Initially, only gainfully active population was intercepted in the governmental statistics and used as a basis for determining labour force participation rates. More recently, beginning with this decade, Statistics Canada began to define as labour force all those either employed and working and those actively looking for work. This new definition is more inclusive and increases the numerical values of the labour force participation figures.

Recent Developments

The census values for labour force participation over the last thirty years or so peg the overall participation of males fifteen years and older at 84 per cent in 1951 and at 76 per cent in 1971. The value was lower during the 1941 census because of the war. Thus, there was a small but perceptible decline. The labour force participation rates for women have risen, doubling between 1941 and 1971 (Table 1). More recently, using data from the monthly Labour Force Survey (Tables 2, 3, and 4) labour force participation of males under twenty years of age shows a slight increase during the last ten years, showing the impact of the post-war cohorts entering the labour market; men in their middle years show a fairly steady and high participation rate; men in their middle and later years show a decrease in their participation rate, which is quite dramatic and implies pensioning off at an earlier age than the sixty-fifth birthday. Women, on the other hand, show a slight increase in labour force participation in the same older years and a strong increase in their young adult years.

Table 1
Population 15 Years of Age and Over in the Labour Force, by Age Group and Sex, Canada, 1941-1961

Age group	1971(a)		1961		1951		1941(b)	
	Male	Female	Male	Female	Male	Female	Male	Female
				(Per cent)				
15-19	46.6	37.0	39.5	33.0	57.1	37.2	50.9	25.8
20-24	86.5	62.8	86.6	49.3	92.3	46.8	68.9	41.8
25-34	92.6	44.5	93.9	29.5	96.4	24.2	86.8	24.8
34-44	92.8	43.9	94.2	31.0	96.7	21.8	91.6	16.1
45-54	90.3	44.4	91.8	33.3	94.5	20.4	93.8	12.9
55-64	80.1	34.4	81.7	24.4	85.7	14.5	89.3	10.9
65+	23.6	8.2	28.4	6.7	38.6	5.1	47.2	5.5
All groups	76.4	39.9	77.7	29.5	83.8	24.1	78.4	20.7

a Excludes Yukon and NWT prior to 1971 and Newfoundland prior to 1951.
b Excludes persons in active service from the gainfully occupied (Labour Force) count for 1941.

Source D. Kubat and D. Thornton. A Statistical Profile of Canadian Society (Toronto: McGraw Hill-Ryerson, 1974), Table J-2, pp. 145-6.

Table 2
Labour Force Participation Rates, by Age Group for Males, Canada, 1966-1975(a)

	14-19	20-24	25-44	45-64	65+	All
1966	38.6	87.4	97.6	91.8	26.4	77.8
1967	39.4	86.0	97.3	91.7	24.7	77.5
1968	39.1	84.4	97.1	91.1	24.4	77.0
1969	37.9	84.2	96.9	91.1	23.6	76.6
1970	38.6	83.2	96.7	90.6	22.7	76.4
1971	39.0	83.4	96.7	90.0	20.0	76.1
1972	40.8	84.0	96.8	89.2	18.7	76.2
1973	43.7	85.3	96.8	88.9	18.3	76.8
1974	44.3	86.1	97.0	88.3	17.8	77.3
1975	46.6	85.5	96.8	87.9	17.4	77.2

a Data are taken from the monthly Labour Force survey of the Canadian labour force. Over the years, the concept of the labour force has become more inclusive. Originally the survey counted only those who were gainfully employed; now those actively looking for work are also included. The data are subject to the standard statistical sampling errors. Residents in the Yukon and the Northwest Territories and Indian reserves, inmates of insitutions, and members of the armed forces are excluded.

Source Statistics Canada, The Labour Force, December 1975, Table 37, Cat. 71-001.

Table 3
Labour Force Participation Rates, by Age Group for Females, Canada, 1966-1975(a)

	14-19	20-24	25-44	45-64	65+	All
1966	31.4	55.6	34.3	33.9	5.9	32.8
1967	31.6	56.6	35.7	35.0	5.9	33.8
1968	31.3	58.4	36.4	35.5	5.9	34.4
1969	31.1	59.3	38.5	35.5	5.5	35.2
1970	30.4	58.5	39.6	36.0	5.0	35.5
1971	31.1	59.9	40.9	36.7	5.1	36.5
1972	32.0	60.5	42.8	36.3	4.3	37.1
1973	34.2	62.5	66.5	37.8	4.4	38.7
1974	36.7	63.0	46.6	37.4	4.2	39.7
1975	36.5	64.4	49.6	37.2	4.4	40.9

a Data are taken from the monthly Labour Force survey of the Canadian labour force. Over the years, the concept of the labour force has become more inlusive. Originally the survey counted only those who were gainfully employed; now those actively looking for work are also included. The data are subject to the standard statistical sampling errors. Residents in the Yukon and the Northwest Territories and Indian reserves, inmates of institutions, and members of the armed forces are excluded.

Source Statistics Canada, The Labour Force, December 1975, Table 37, Cat. 71-001.

Table 4
Labour Force Participation Rates, by Age Group and Sex, Canada, 1976-1978(a)

	1976		1977		1978(b)	
	Male	Female	Male	Female	Male	Female
			(Per cent)			
17-19	66.3	60.2	68.0	59.5	68.5	59.7
20-24	85.1	67.3	85.1	68.8	90.0	71.6
25-34	95.5	53.9	95.3	55.2	96.0	59.0
35-44	96.0	53.3	95.9	55.7	96.5	57.7
45-54	92.8	48.3	92.4	49.2	93.1	52.1
55-64	76.7	32.1	76.6	32.2	76.8	32.8
65-69	25.5	7.8	25.1	8.5	22.4	8.4
70+	9.8	2.2	9.2	2.0	9.6	2.8

a Based on Labour Force survey data, seasonally adjusted. Starting January 1976, the survey contains substantial revisions as compared to the previous years. Population sampled is 15 years of age or older and residing in Canada, with the following exclusions: residents in Yukon and Northwest Territories; persons on Indian reserves; inmates of institutions, and full-time members of the armed forces.

b For May 1978.

Source Statistics Canada, The Labour Force, Cat. 71-001, December 1978, December 1977, May 1978.

Expected Labour Force Participation

There are three major components which will influence the labour force participation in addition to the economy:

1. population composition;

2. occupational composition;

3. income-leisure choices.

In terms of population composition, the Canadian population of the labour force age will remain stable and even increase somewhat for the foreseeable future. (Denton and Spencer, 1977). There will be some tapering off of the size of the young entrants into the labour market starting in about ten years and lasting at least for another fifteen years, depending whether or not the expected increase in fertility will take place. In any case, the present mortality conditions assure a labour force virtually unaffected by dying off at later working ages. Thus, any additional needs of the labour force may be met from the pool of persons who will not die, as it were. In terms of occupational composition, the new occupational structure will be heavily weighted towards service occupations (in the widest sense of the word) and is likley to be unisex, thus enlarging the pool of potential labour force to the total population. Working in such occupations also allows "flex-time" arrangements, thus permitting parenting and working at the same time. In terms of income-leisure choice, the prognosis is uncertain. On the one hand, maximization of income is characteristic of the present-day working behaviour (Linder, 1970); on the other hand, the experience with the younger labour force seems to indicate a certain detachment from work coupled with absenteeism. The latter may be only a function of youth with precedents in the past (Wright and Hamilton, 1978). In any case, the labour force participation is not affected, until the latter years of life where the clear prevalence of early retirement choices is observable.

Were one to correct today's labour force participation data in the later years of life (e.g., starting with the age of 60 or higher) by the mortality of earlier decades, the observed decrease in labour force participation would be much reduced. In other words, inasmuch as the recent utilization of early retirement is being justified primarily on reasons of health (Ball, 1978), one may surmise that some years earlier, among males, those now retiring early would have died. Thus, a proportion of male cohorts remaining in the labour force may be fairly constant over time (Tepperman, 1975). The case of the female labour force has been greatly modified by the changes in the cultural redefinition of woman's role in society, away from the home to the labour market.

SUMMARY

The tentative conclusions one may draw from the changes in the occupational structure of Canada are as follows:

1. The composition of the labour force will tend towards being evenly distributed between the sexes, with some under-representation of women in child-bearing ages between 25 and 35 years. The labour force participation for women will stabilize at about 60 per cent during the child-bearing ages and will tend to be unisex, economic conditions permitting, for the other working life age groups.

2. As the "professionalization" of more and more occupations progresses so will the attachment to the labour force become stabilized and the pressures for early retirement may abate.

3. The labour force participation of persons 55 years or over is more likely to increase as much as the disincentives to continue working, namely ill health, unpleasant working conditions, and a lack of retrainability diminish.

4. In another thirty years or so, the present labour force composition, in which the workers possess but minimum formal education and the resulting lack of skills to manipulate their own lives, will be fully replaced by workers whose formal education will exceed the job requirements. More likely than not, such a labour force will be more respectful of the value labour force participation brings to the society as a whole.

5. It is quite possible that the swelling of the labour intensive sectors of the economy will require that more people work at reduced compensation for a longer period of their lives faced with an unprecedented longevity in good health. This factor alone would reintegrate work into human life, for men and women alike.

NOTE ON THE COMPARABILITY OF LABOUR FORCE PARTICIPATION DATA

The labour force participation rates presented here are from the monthly Labour Force Survey. Their base population is non-institutionalized Canadian population reached via a mailed questionnaire. These data are customarily used in the literature on the economy of the country. They reflect the "true" participation within the standard sampling errors; that means there may be several points deviation up or down for the respective values. These data were used for labour force participation predictions under high, medium, and low fertility assumptions by the Economic Council of Canada, drafts of which are now available to the Commission as part of the ECC's project on Canada's Retirement Income

Policies, now underway. Inasmuch as the process of short-term projections (until 1991, from the base year of 1976) does not allow for any radical changes and has to incorporate the previous trends, the projections are acceptable, even though, to my mind, the participation rates may be higher in the late 1980s for the older groups for reasons outlined. Of course, underestimating labour force participation can only help to cover the potential shortfall in CPP funding.

The Commission has also before it labour force participation rates projections by the Department of Insurance, contained in Appendix C, of the Report by Keith H. Cooper, June 7, 1978. The rates are not entirely comparable due to the different assumption entering the computations, inasmuch as the population base for the Department of Insurance is constricted compared to the "true" population.

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Private Pensions and Indexing: A Review of Issues and Policy Alternatives

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March, 1979

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1. INTRODUCTION: THE INDEXING DEBATE

The origins of the pension indexing debate in Canada can be traced to the acceleration of price and wage inflation which started in 1972, and to the recent levelling off of the pace of inflation at rates about two to three times higher than the more moderate inflation rates of the 1960s.

During the first half of the 1970s, while inflation was accelerating, private-sector employer-sponsored pension plans were faced with two interrelated problems. On the one hand, the earnings which their investments generated were clearly insufficient in real terms - in many cases, the real rates of return earned were negative, and well below the estimates originally factored into the plans. It was difficult for such plans to remain actuarially sound in face of the increasing liabilities created by the rapid escalation of money wages and prices. On the other hand, the indexing of public sector pension plans, together with the indexing of the Canada-Quebec pension plans (CPP and QPP), and Old Age Security (OAS) pensions imposed added pressures on employers to introduce similar post-retirement indexation of benefits.

Private pension funds obviously were caught in a financial dilemma; bonds and stocks were unable to serve as hedges against accelerating inflation and they were also facing increasing liabilities. It was felt that full-scale indexing of private post-retirement benefits would only exacerbate plan liabilities. Indeed, some observers claimed that post-retirement benefit indexing would place the entire private employer-sponsored pension system in jeopardy.

Thus, Douglas Fullerton argued in an article in The Ottawa Citizen on October 2, 1974, that "in a mobile and inflationary age, the traditional company pension plan has little place." And, in a 1974 newsletter, William M. Mercer Limited warned that unless the rate of inflation was brought under control and reduced, that "it would not be unduly pessimistic to forecast a breakdown" of the entire private pension system.

The investment community and private employers were a focal point for many of these pressures, and tended to respond by attacking the federal government employee, indexed pension system. It was argued generally that the total costs of these pensions were seriously underestimated, and that Ottawa could afford to enter into such plans only because of its taxing powers. That is, Ottawa need not concern itself with the viability of its pension schemes in a manner similar to private plans. Consequently, many individuals called for the de-indexation of federal government employee pension plans, and there was some spill over into demands that even the CPP and OAS systems be de-indexed partially.

Keith Cooper, a well-known Canadian actuary, adopted a more moderate approach. In a speech presented to the Guelph Chamber of Commerce on June 6, 1978, he argued that "public servants are being paid base

salaries that are roughly comparable to those in the private sector but with a pension program that costs 9 per cent of pay more than average plans in the private sector. Consequently, their total compensation package ends up being ahead of their private-sector counterparts. This suggests that if public servants are to retain their indexed pensions, they should either reduce the level of benefits initially provided at retirement, take a cut in pay, and/or eliminate the overly generous early retirement features of the plan."

But, as we note in this study, without full indexing, the real value of pre-retirement and post-retirement pensions declines very quickly at the current high rates of inflation. Moreover, it is unlikely that society would deliberately choose to allow private pensioners to experience serious erosions in the real value of their retirement income. The many examples of ad hoc or partial indexing suggests that private employers share the general objectives of sustaining the purchasing power of private pension benefits. This then raises the fundamental concern of this study; if the corporate sector appears unable to support financially a post-retirement indexed pension system, and society cannot afford to, or is unwilling to allow non-indexation of post-retirement pensions, then who is to bear the cost for indexed post-retired pensions? And equally important, what proportion of the total post-retirement pension should be indexed?

There are two associated elements in the debate concerning private pension indexing. This study provides no estimates of the financial costs of full indexing to private employers under the various schemes considered, but a cost sharing formula could be arrived at which included government, employers, and employees, all contributing to indexing costs.(1)

The second element is the reality that the institutional pension industry now is a dominant force in Canada's investment industry. Full indexation of private post-retirement pension benefits would likely serve to increase that dominance. As Yves Guerard pointed out in a paper entitled, Pension Funds and Their Impact on the Direction of the Economy, in 1977 the existing assets of the pension industry totalled approximately $40 billion, and that this figure is larger than the aggregate corporate direct and guaranteed debt or the market value of the 300 stocks of the TSE composite index. Moreover, the sum represented about one-half of the assets of the top fifty industrial corporations.

Thus, the primary intention of this study is to consider who or what institutions should assume the costs or risks of indexing private pension benefits. This study illustrates that there is no single answer to the above question, even though a fairly good case can be made that indexed private benefits are required. A series of proposals that have been advanced on this subject are reviewed and critically assessed in an attempt to come to grips with the question of indexation and its relative burden.

The structure of the study is as follows. Section 2 discusses the role of the private pension system and its interaction with individual savings and the federal social security programs in Canada. As the study notes, there are three fundamental tiers in the pension-social security system. There is the government tier, consisting of Old Age Security and the Guaranteed Income Supplement, and in Ontario GAINS, together with the Canada Pension and Quebec Pension Plans; there are the private employer-sponsored plans; and as well, there are private individual savings within which are included RRSPs.

Section 3 of this study provides an overview of inflation in Canada, particularly in terms of its causes, the stability of inflation, and its so-called neutrality properties. This section also includes a discussion of the relation between nominal interest rates and inflationary expectations, the apparent winners and losers from inflation, and the problems which have arisen for employer-sponsored pension funds in an inflationary climate.

Section 4 considers the general subject of indexing and government financial management. One subject discussed here relates to whether or not existing indexation provisions have tended to be inflationary for the industrial countries. A review of some estimates on income distribution in Canada is used to support the contention that post-retirement incomes should be indexed to some degree. As well, this section considers the redistribution impacts of government on incomes and expenditures in Canada, and undertakes a brief review of the relationship between government revenue growth and spending growth.

Section 5 presents a simple theoretical model predicated on the life-cycle savings hypothesis. This model is used as a basis for evaluating the various post-retirement indexing schemes that have surfaced recently. Finally, the last section of the study provides a critical assessment of the various post-retirement indexation schemes. As this section of the report stresses, a critical aspect in the various proposals is the likely impact of any indexing plans on the distribution of income among persons in Canada. Unfortunately, the distributional effects of some of these schemes are potentially very complicated, and therefore hard to evaluate.

The various indexing proposals are summarized under the following topics - though there is considerable overlap among the proposals.

1. The index bond solution
2. The government as an insurer of last resort
3. Excess interest scheme
4. Continual ad hoc indexation adjustments
5. The collective bargaining fulcrum
6. The Royal Commission proposal

7. Cofirentes +; Martin O'Connell proposals - proposals to extend CPP/QPP
8. Keith Cooper - partial indexation plan.

2. THE THREE TIER POST-RETIREMENT SAVINGS SYSTEM IN CANADA

a) The Federal Social Security System

The federal social security system in Canada consists of a series of programs - Old Age Security (OAS), the Guaranteed Income Supplement (GIS), and the Canada and Quebec Pension Plans (CPP and QPP). The universal OAS program provides an inflation escalated benefit for those individuals 65 years of age who meet the necessary residence requirements in Canada. Beginning in 1977 the basic pension under the Old Age Security Act was $141.34 per month for an individual.

The GIS, which amounted to a maximum of $99.13 per month in January, 1977 for individuals and $176.66 per month for a family of two, provides an additional form of social security income designed to ensure a minimum level of individual or family income. It is thought that the GIS, which is subject to an income test, will diminish in importance over time as more Canadians draw benefits from the CPP and QPP. In January, 1977 the maximum monthly pension available under the OAS and GIS was $240.47 for an individual and $458.74 for a married couple. Both are financed on a pay-as-you-go basis.

The CPP and QPP are social insurance plans which gear the benefits to earnings-related contributions of both employees and employers.

The CPP and QPP plans are compulsory, and cover nearly all employed and self-employed individuals, and there are no federal government contributions or subsidies to the funds. The main benefits are retirement income geared to work-related contributions, although widows, widowers, orphans, and disabled persons are also protected under the plan. The CPP is only partially funded, and in a sense can be described as falling somewhere in between a pay-as-you-go funding scheme and a fully funded system.

Employers and employees each contribute 1.8 per cent of the employee's earnings for an aggregate contribution of 3.6 per cent of the earnings base. The earnings base is calculated as the difference between the year's maximum pensionable earnings (the YMPE) and the year's basic exemption (YBE).

In 1977, the YMPE was $9,300 and the YBE (10 per cent of the YMPE rounded down to the next $100) totalled $900. Thus, the maximum contribution in 1977 was $151.20 for the employee and employer of an employed individual.

The CPP provides a retirement pension of 25 per cent of adjusted average earnings. The 1977 maximum pension was 25 per cent of $8,333.33 or $2,083.32 per annum. The direct pension benefits are indexed to the consumer price index increase, while the YMPE is indexed in a somewhat different way. The YMPE, which governs the contributions and ultimate benefits paid, is escalated at 12 1/2 per cent per annum until it reaches the industrial composite index of wages and salaries. After it reaches that total, future increases in the YMPE will be tied to the increases in the industrial composite wage and salary series.

In 1977, Old Age Security payments from the federal government were just under $4.7 billion. This represented 35.9 per cent of total federal government transfer payments in that year, 2.7 per cent of total personal income, and 15 per cent of total personal direct taxes. An examination of the data in Table 1 reveals that Old Age Security payments have tended to remain a constant 2.7 to 2.8 per cent of total personal income over the past ten years. On the other hand, since the Old Age Security payments are funded on a pay-as-you-go system, the payments as a proportion of total personal direct taxes have tended to decline in two stages since 1968. In that year they represented just under 18 per cent of total personal direct taxes and in 1977 they amounted to just 15 per cent.

Payments under the Canada and Quebec pension plans amounted to just under $1.4 billion in 1977 - roughly .8 per cent of total personal income in that year. On the other hand, payments into the Canada and Quebec pension plans totalled $2.4 million in 1977, equal to 1.7 per cent of personal disposable income and 7.7 per cent of personal direct taxes. Altogether in 1977, CPP, QPP, and OAS receipts represented 3 1/2 per cent of total personal income in Canada and the contributions into the scheme amounted to 22.7 per cent of personal direct taxes and just over 4 per cent of total personal income. As a proportion of total personal direct taxes, the contributions to Canada Pension Plan, Quebec Pension Plan, and OAS have declined from 29.1 per cent in 1968 to just under 23 per cent in 1977.

It is also interesting to note that the CPP and QPP contributions, which are a form of forced savings imposed upon individuals by the government, have declined as a proportion of total personal and unincorporated business savings over the last ten years. In 1968 these contributions equalled 35 per cent of total savings, excluding these contributions, and in 1977 they amounted to 16.2 per cent. Hence, the importance of this tier relative to total national savings has been on a decline for the past ten years

b) Employer-Sponsored Pension Plans

Recently there has been a series of special reports and studies on the subject of pensions and their actuarial status. For example, Statistics Canada carries out annual surveys of pension plans (Cat. 74-

201). In March 1978 the Financial Executives Institute of Canada published a report on their own survey of pension plans. As well, there have been some newly published books on the subject of pension funding in Canada, one by Pesando and Rea, entitled Public and Private Pensions in Canada: An Economic Analysis, and one by Geoffrey Calvert, entitled Pensions and Survival.

Statistics Canada data provide a good starting point for an empirical discussion on the current status of pensions in Canada. Since this report deals with indexing - as it could potentially affect pension funds, pensioners, and the financial market - it is important to consider the actual dimensions and features of most plans which are currently in place. That is, many of the concerns expressed about the purchasing power of benefits relate to the empirical realities of the plans, their size, their asset composition, their funding situations, and the inflation protection built into the funds for the pensioner.

The Statistics Canada data we refer to cover employer-administered pension plans - and included in the employer classification are the various levels of governments. As the data in Table 2 illustrate, slightly less than 40 per cent of the work-force were members of an employer-sponsored plan in 1976. As Statistics Canada notes:

> "The public sector consists of some of the largest plans in the country, notably those for the federal employees, the Armed Forces, crown corporations and provincial employees...that is, there are relatively few plans within the public sector, but they are large in terms of employee coverage...The vast majority of the plans (in 1966) - 14,999 out of 15,600 - were in the private sector and covered 2,147,000 persons, 55 per cent of all participants."(page 16)

The figures in Table 2 illustrate the wide differences in coverage. Virtually all public sector employees were covered by pension plans in 1976, whereas the private sector coverage has been consistently below 40 per cent of the work-force. (If adjustments are made to exclude the self-employed and part-time workers, the proportion approaches 65 per cent.) This latter point possibly requires underscoring. That fact that fewer than 40 per cent of private sector employees are covered by employer-sponsored pension plans has distributive implications for the various indexing schemes which have been proposed. As we note in Table 2, coverage is greatest in the high wage industries (mining, manufacturing, construction, and transportation and communications) and in the public sector.

From the perspective of a pensioner seeking protection for his stock of wealth during his pre-retirement years and for his income flow in his retirement years, his problem can be broken up into two time frames - protection of real wealth while he is contributing to his pension fund, and protection of wealth (and earnings) after retirement. In the pre-retirement years, those members of private pension plans which

have formula benefits geared to their income just prior to retirement are protected somewhat against inflation.

Pre-retirement indexing refers to the tying of pension benefits to incomes earned, which in turn are assumed to reflect directly inflation and productivity improvements. Thus, the pensioner would want to insure that the real benefit in year one of retirement has been attained in line with price and productivity increases during the individual's working life. While no plan specifically allows for full pre-retirement indexing for inflation and productivity, since some type of averaging formula is generally applied, the following discussion simply illustrates that plans based on the average of highest income provide the best pre-retirement protection.

Table 3 below sets out an average annual earnings series for Canadian workers between 1957 and 1977. Over that time interval the consumer price index rose at an average rate of 4.2 per cent per annum. Over the five years ending 1977, the index rose an average of 8.9 per cent per annum, while in 1977, the consumer price index rose 8 per cent.

If the pension benefit were based on the final year's work income, and assuming that the formula specifies that the pension benefit equals 40 per cent of that income (2 per cent of earnings for each of the twenty assumed years of service), then in this example the retirement benefit would be $4,108 per annum - 40 per cent of the $10,270 amount. In this case, it would appear that the plan allows for full pre-retirement indexing. However, if during this final year the employee experiences some unemployment or underemployment because of general economic conditions, then the benefit would be below the $4,108 figure. In effect, economic conditions can offset the apparent full pre-retirement index provision of such plans.

If the benefit is based on an average of the last five years' earnings, the benefit declines to $3,312 per annum; based on a twenty-year income average, the benefit declines to $1,936 per annum. As long as wages and salaries increase somewhat faster than the pace of inflation, the average of best earnings plan provides the most protection in an inflation environment.

Pre-retirement inflation protection of benefit payments then can be improved for the employee if he is able to negotiate collectively either a final earnings plan or a highest average earnings plan. Since such plans are in existence, and pre-retirement indexing has been provided, the question is raised once more as to why negotiated private sector post-retirement indexing is not more widespread.

Alternatively, if Canada were to move into a genuinely deflationary period (when actual price levels decline during the working years), nominal money earnings would be declining, and a pensioner's interests would be protected best by the lifetime average earnings scheme.

The types of employer-sponsored plans in existence have been changing in the 1970s, and these trends are evident in the data in Table 4. In 1976, 73.7 per cent of the still working members of pension plans were covered by defined benefit plans, with some inflation protection offered by the high proportion of plans in either the average best earnings category (52.8 per cent) or the final average earnings category (3.2 per cent). Money purchase plans and flat benefit plans accounted for 4.7 per cent and 19.7 per cent respectively of the covered employees. The number of workers covered by average best earnings plans, a plan form offering at present the best form of pre-retirement inflation protection, has been rising. In 1960, 34 per cent of the covered workers were in an average best earnings plans. In 1976, the proportion rose to 52.8 per cent. These plans are among the largest in operation and obviously must be favoured by large employers.

Most of the members of final earnings plans, final average plans, or average of best earnings plans in 1976 were entitled to pension credits of 2 per cent of earnings for each year of credited work. Membership in career average earnings plans tended to also earn pension credits of 2 per cent or more of earnings for credited service. Because of the nature of the difference in the numbers covered by career average earnings plans and final average or average best earnings plans, the change between 1965 and 1976 in the proportion of the work-force earning 2 per cent or more in benefits per year of service has been greater in the career average case. In a nutshell, career average plans provide slightly less inflation protection in the working years; as a result, the 2 per cent or more benefit criterion has spread more rapidly within this group of plans. (See Table 5.)

The figures presented in Table 4 indicate that flat benefit plans accounted for only 6.2 per cent of private employment pension plans in 1976. In a flat benefit plan the pensioner earns retirement income on a fixed amount of money for each year of service. Some inflation escalation can be seen in these figures with a greater concentration of higher benefit rates over time. (See Table 6.)

A further recognition of inflation follows from the fact that there has been some increase in the number of employer-designed pension plans which provide indexed benefits to the employees. According to Statistics Canada, at a national level there were 141 plans in 1974 which had indexed benefits, covering 607,894 workers. In 1976, the number of indexed plans increased to 171, covering just over one million workers. Indexed benefits were available to nearly 27 per cent of the covered work-force in 1976.

Inflation indexing of benefits is largely a public sector fact of life, however, since 53 per cent of covered public sector workers are protected by indexing, while less than 5 per cent of the private sector workers had indexing made available to them. The inflation escalation protection is not uniform, but as Statistics Canada notes:

"In recent years there has been a trend towards a higher ceiling which in some cases went up to 8 per cent or 10 per cent. A significant variation to this pattern has been the complete lifting of the ceiling to tie escalation directly to the full consumer price index." (page 54)

Ad hoc indexing occurs as a number of employers periodically review their pension programs in the light of the inflation erosion of benefits. Thus, the Financial Executives Institute, in a survey published in March 1978, notes that 56 per cent of the employers they contacted undertook ad hoc adjustments, and only 5.4 per cent of employers indexed pension benefits according to a published formula.

According to Statistics Canada, the pattern of employee contribution rates has remained fairly fixed in the past decade.

"At the beginning of 1976 nearly 60 per cent of the members of all contributory plans were required to contribute between 5 per cent and 6.99 per cent of earnings, compared with 61 per cent in 1965. Within the range the most common rate was 5 per cent of earnings which applied to 27 per cent of the members of all contributory plans, followed closely by 6 per cent of earnings applied to only 9 per cent of all members, with the greatest concentration at the 4 per cent level."

According to the series of surveys of total labour cost in Canada, undertaken by Statistics Canada and summarized by K.J. Harwood in an article in the January 1977 issue of The Canadian Statistical Review, "about one-third of the private pension plans are 'integrated' with the CPP-QPP. It should be noted that while one plan in three is integrated, nearly three-quarters of all members are in these plans. Each time the earnings base for the CPP-QPP rises, there is an increase in contributions to those plans resulting in a corresponding decrease to private plans." This interrelationship between employer-sponsored pension plans and CPP-QPP system is important to keep in mind when evaluating the various schemes that have been put forth. Moreover, the relative importance of employer contributions to pension plans varies across industries, as does the coverage of these plans.

Table 7 shows that in firms and institutions in which private pension schemes exist, employer contributions varied between 1.5 per cent in the trade industries, and 5.1 per cent for teaching and academic staff in educational institutions of total labour compensation. In manufacturing and mining, the proportion was about 2 1/2 per cent, although this figure applied to the early 1970s. The relative importance of employer pension contributions to total labour compensation tends to be rather small in firms with private pension plans and hence there seems to be some room for absorption of the additional costs stemming from post-retirement indexation of benefits.

c) The Private Savings Tier

In 1977, net personal savings were $14.9 billion or 10.7 per cent of personal disposable income. This volume of net savings represented an almost 5 1/2-fold increase in nominal terms in the volume of personal savings since 1968. (In real terms, net personal savings in 1977 were 2 1/4 times as large as in 1968.) Gross savings, including capital consumption allowances and miscellaneous valuation adjustments, totalled just under $22 billion in 1977. In 1976, net personal savings totalled $13.6 billion and gross savings $19.8 billion. In that year, according to Statistics Canada (Cat. 74-401), there were approximately 1.1 million registered retirement savings plans in effect and the total contributions surpassed $1.5 billion or 11.2 per cent of total net savings (7.7 per cent of total gross savings in that year). Combined employee and employer contributions to funded employer-sponsored pension plans totalled an additional $3.4 billion in 1976. This represented 24.9 per cent of total net savings in 1976 and 17.1 per cent of total gross savings.

Thus, in total, contributions for registered retirement plans and funded employer-sponsored pension plans represented only 36.1 per cent of total net personal savings in 1976. The bulk of the savings went into financial securities, which represented planned additions to wealth to finance retirement income as well as to provide for endowments to be passed on to following generations.

If one adjusts the net personal savings figure in 1976 to include the tax contributions used to finance the Old Age Security system as well as the contributions to Canada Pension Plan and Quebec Pension Plan, one derives an adjusted net savings figure of $20.1 billion in 1976. Of this adjusted basis, employee and employer contributions to funded employer-sponsored pension plans equals 16.9 per cent of net savings, tax contributions to the OAS 21.4 per cent, and payments to the CPP-QPP, 11 per cent.

In total then, fixed savings for government or employer pension schemes amounted to 54.2 per cent of the adjusted net personal savings in 1976. Thus, in 1976, approximately 46 per cent of the flow of total adjusted net savings was left to the discretion of the individual. In Table 8 we can observe that a large proportion of the gross savings of individuals and unincorporated businesses was directed towards the chartered banks and the near banks throughout the period 1975 to 1977. Deposits in the banks and near banks represented in 1977 just over 74 per cent of total gross savings, or just under 52 per cent of total net lending by individuals and unincorporated businesses. Canada Savings Bonds are also an important medium for savings. Contributions to life insurance plans and pension plans amounted to just under 33 per cent of total gross savings in 1977, and just under 23 per cent of total net lending.

For the purpose of this study, it is interesting to note the dramatic increase in the personal savings rate over the past decade. In 1968, and indeed until 1971, the personal savings rate (net personal savings as a ratio of personal disposable income) averaged between 5.3 and 5.8 per cent. In 1972, mirroring the acceleration in the rate of inflation, (see Table 1) the personal savings rate rose, peaking in 1975 when the consumer price index rose 10.9 per cent. The savings rate has remained at a very high level since 1975.

Several factors could account for the parallel increases in the personal savings rate and the rate of inflation. Changes in the tax system which provided a role for registered retirement savings plan contributed to the sharp increase in the personal savings rate since 1971. But also of importance has been the impact of higher rates of inflation on the long run savings and wealth accumulation decisions of families. That is, in the 1970s, the coincidence of higher rates of inflation with the generally higher rates of unemployment created a mood of extreme uncertainty. This apparently resulted in many more individuals deciding to save for the so-called rainy day.

Indeed, the importance of the latter two factors - the uncertainty effect and the declining wealth effects of higher rates of inflation - in generating higher levels of personal savings and savings rates, has been empirically documented in the study by David Howard, published in the November 1978 issue of The Review of Economics and Statistics. According to Howard, (Page 554) "this paper has detected several ways in which inflation influences the personal savings rate. First, and most generally, there is the indirect effect by way of its influence on the real value of net liquid assets...The results reported in this paper on the relation between inflation and personal saving indicate that inflation tends to encourage personal saving, both through direct uncertainty effects and through indirect channels, such as the real balance effect. The results reported here indicate as well that inflation is not the only variable that affects saving behaviour through uncertainty effects, since in Canada, Germany, the United Kingdom, and the United States, unemployment variables also have positive effects on personal savings."

Howard's findings, as well as the clear parallel movements between inflation rates and personal savings rates, suggest some scope for a life cycle explanation of savings decisions when a large proportion of total net personal savings is left to the discretion of individuals. Individuals do appear to alter their savings decisions relative to their inflation fears, as well as relative to their retirement needs. This premise is postulated by the life-cycle model, a model that we will discuss in detail in Section 5 of this study.

In effect then, adjustments to inflation in terms of savings for retirement income do appear to be made by individuals, and this is another critical factor to be kept in mind when evaluating the various proposals relating to indexation that have been put forth.

Table 1
Selected Savings and Personal Tax Ratios, 1968-1977

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Rate of inflation	4.0	4.6	3.3	2.9	4.8	7.6	10.8	10.8	7.5	8.0
Personal savings rate	5.6	5.4	5.3	5.8	7.4	9.1	10.0	10.9	10.8	10.7
CPP and QPP contributions/PI	2.0	2.0	2.0	1.8	1.8	1.6	1.7	1.7	1.7	1.7
CPP and QPP contributions/PDT	11.2	10.0	9.1	8.5	8.1	7.7	7.6	7.9	7.8	7.7
PDT/PI	14.8	16.3	17.3	17.6	17.5	17.4	18.1	17.6	18.2	18.2
CPP and QPP receipts/PI	.0	.1	.2	.2	.3	.4	.4	.5	.7	.8
OAS/PI	2.6	2.7	2.8	2.8	2.9	2.9	2.8	2.8	2.8	2.7
OAS/PDT	17.9	16.5	16.1	16.2	16.6	16.6	15.6	15.6	15.2	15.0
CPP and QPP contributions/S	35.0	36.9	36.7	31.4	23.7	18.0	17.0	15.7	16.2	16.2
PI/GNP	76.7	77.4	77.8	78.4	79.6	79.6	79.2	82.4	81.6	82.0
Wages, salaries, etc./PI	69.0	69.7	70.1	69.6	68.7	68.2	68.5	68.6	69.3	69.7

Note CPI - Consumer Price Index
PDT - Personal Direct Taxes
PI - Personal Income

All the figures represent either ratios (in percentage terms), or percentage rates of change.

Source Statistics Canada, National Income and Expenditures Accounts, 1963-1977, Cat. 13-201.

Table 2
Proportion of Paid Workers in Labour Force Covered by Pension Plans, by Industry, 1970, 1974, and 1976

Industry	Members in pension plans			Percentage of paid workers in pension plans			Average weekly wages
	1970	1974	1976	1970	1974	1976	1976
	(Number)			(Per cent)			(Dollars)
Agriculture	1,388	1,017	1,194	1.3	1.0	.7	317.12
Mines, quarries, oil wells	80,211	90,525	105,533	66.8	70.5	72.1	241.19
Manufacturing	796,837	909,240	1,011,974	43.2	45.7	48.4	331.02
Construction	107,414	234,982	264,374	23.5	44.3	43.9	262.03
Transportation and communication	337,809	363,928	408,918	49.2	47.5	49.5	226.23
Trade	142,504	196,277	217,234	12.9	14.4	13.7	213.71
Finance, insurance and real estate	149,906	171,619	180,433	44.7	42.8	37.7	160.49
Community, business and personal services	445,158	625,905	615,606	25.9	28.7	25.2	
Public administration	761,109	830,752	1,097,232	98.0	98.0	98.0	228.03(a)
Total	2,822,336	3,424,245	3,902,498	39.2	40.7	38.8	

a The industrial composite wage excludes the public sector.

Source Statistics Canada, Pension Plans in Canada, 1976, Cat. 74-401, p. 23.
Statistics Canada, Canadian Statistical Review, Sept. 1978, p. 54.

Table 3
Pension Benefits Credited in Pre-Retirement Years

	Average labour income per employee	Annual percentage change
	(Dollars)	(Per cent)
1957	2,477	
1967	3,942	7.9
1973	6,242	10.0
1974	7,104	13.8
1975	8,282	16.6
1976	9,512	14.8
1977	10,270	8.0

Benefit payment based on

1.	Average Income 1973-1977	.40 x $8,282 = $3,312/annum
2.	Average Income 1957-1977	.40 x $4,841 = $1,936/annum
3.	Final year Income 1977	.40 x $10,270 = $4,108/annum
4.	Highest Income 1977	.40 x $10,270 = $4,108/annum

Source These figures are calculated from Statistics Canada data on total labour income and total employment. The assumed benefit formula is 2 per cent of earnings for twenty years of service.

Table 4
Pension Plans and Members by Type of Benefit, 1960, 1970, and 1976

Type of benefit	1960				1970				1976			
	Plans		Members		Plans		Members		Plans		Members	
	(Number)	(Per cent)	(Number)	(Per cent)	(Number)	(Per cent)	(Number)	(Per cent)	(Number)	(Per cent)	(Number)	(Per cent)
Unit benefit												
Final earnings	28	.3	10,793	.6	16	.1	5,613	.2	25	.2	6,980	.2
Final average earnings	270	3.0	283,720	15.2	377	2.3	169,798	6.0	413	2.6	126,746	3.2
Average best earnings	117	1.3	632,295	34.0	970	6.0	1,260,917	44.7	1,439	9.2	2,059,489	52.8
Career average	2,370	26.6	468,247	25.1	4,753	29.5	679,631	24.1	4,945	31.6	682,343	17.5
Level percentage of earnings	-	-	-	-	46	.3	2,721	.1	26	.2	748	-
Total	2,785	31.2	1,395,055	74.9	6,162	38.2	2,118,680	75.1	6,848	43.8	2,876,306	73.7
Money purchase	5,392	60.4	242,127	13.0	8,471	52.5	137,680	4.9	7,179	45.9	183,651	4.7
Profit sharing	211	2.4	23,616	1.3	310	1.9	21,374	.8	231	1.5	20,092	.5
Flat benefit	411	4.6	177,059	9.5	742	4.6	424,623	15.0	961	6.2	769,568	19.7
Composite	121	1.4	24,824	1.3	265	1.6	26,221	.9	241	1.5	29,713	.8
Other	-	-	-	-	187	1.2	93,758	3.3	165	1.1	23,168	.6
Total	8,920	100.0	1,862,681	100.0	16,137	100.0	2,822,336	100.0	15,625	100.0	3,902,498	100.0

Source Statistics Canada, Pension Plans in Canada, 1976, Cat. 74-401, p. 23.

Table 5
Benefit Rates in Unit Benefit Plans with Membership by Earnings Base, 1965, 1970, 1974, and 1976

Benefit rate group (Per cent)	1965 (Per cent)	1970 (Per cent)	1974 (Per cent)	1976 (Number)	1976 (Per cent)
	Members in final, final average, and average best earnings plans				
Less than 1	.5	.6	.7	13,886	.6
1 - 1.24	7.6	9.5	6.8	75,376	3.4
1.25 - 1.49	5.3	3.8	1.7	81,330	3.7
1.50 - 1.74	11.0	6.2	8.9	122,054	5.6
1.75 - 1.99	.7	1.2	1.9	44,473	2.0
2 and over	65.8	73.2	74.8	1,742,720	79.6
Variable by sex	9.1	.2	.2	2,923	.1
Other	-	5.3	5.0	109,442	5.0
Total	100.0	100.0	100.0	2,192,204	100.0
	Members in career average earnings plans				
Less than 1	2.8	.5	1.6	32,765	4.8
1 - 1.24	6.8	6.6	6.2	22,813	3.3
1.25 - 1.49	3.6	1.7	.9	6,771	1.0
1.50 - 1.74	31.2	19.4	14.5	92,321	13.5
1.75 - 1.99	15.6	10.7	9.2	61,617	9.0
2 and over	29.5	49.0	60.3	423,508	62.1
Variable by sex	10.5	.4	.2	1,099	.2
Other	-	11.7	7.1	41,449	6.1
Total	100.0	100.0	100.0	682,343	100.0
	Total				
Less than 1	1.4	.6	1.0	46,651	1.6
1 - 1.24	7.3	8.5	6.7	98,189	3.4
1.25 - 1.49	4.7	3.1	1.5	88,101	3.1
1.50 - 1.74	18.5	10.5	10.3	214,375	7.5
1.75 - 1.99	6.2	4.2	3.9	106,090	3.7
2 and over	52.3	65.4	70.8	2,166,228	75.4
Variable by sex	9.6	.3	.2	4,022	.1
Other	-	7.4	5.6	150,891	5.2
Total	100.0	100.0	100.0	2,874,547	100.0

Source Statistics Canada, Pension Plans in Canada, 1976, Cat. 74-401, p. 40.

Table 6
Benefit Rates in Flat Benefit Plans, 1965, 1970, and 1976

Benefit rate (Monthly pension for each year of credited service)	Members					
	1965		1970		1976	
(Dollars)	(Number)	(Per cent)	(Number)	(Per cent)	(Number)	(Per cent)
0 - 4.99	265,205	80.9	141,581	34.9	85,427	11.4
5.00 - 6.99	5,910	1.8	138,993	34.3	100,994	13.4
7.00 - 7.99	-	-	2,808	.7	18,116	2.4
8.00 - 9.99	-	-	4	-	160,618	21.4
10.00 - 11.99	-	-	191	.1	110,250	14.7
12.00 - 13.99	-	-	-	-	4,770	.6
14.00 - 15.99	-	-	-	-	158,229	21.1
16.00 - 17.99	-	-	2	-	7,552	1.0
18.00 - 19.99	-	-	-	-	-	-
20.00 and over	-	-	158	-	2,094	.3
Variable by sex	-	-	2,073	.5	2,149	.3
Other	56,817	17.3	119,658	29.5	100,904	13.4
Total	327,932	100.0	405,468	100.0	751,103	100.0

Source Statistics Canada, Pension Plans in Canada, 1976, Cat. 74-401, p. 42.

Table 7
Employer Contributions to Private Pension Plans as a Percentage of Total Labour Compensation in Canada, Selected Industries and Periods, 1970-1975

	(Per cent)
Manufacturing (1971)	2.5
Mines, quarries, and oil wells (1972)	2.6
Finance, insurance, and real estate (1970)	3.6
Transportation, communications, and other utilities (1970)	4.5
Trade (1972)	1.5
Education, libraries, and museums (1974)	
Teaching staff	5.1
Non-teaching staff	2.3
Services to business management (1975)	2.0

Source Statistics Canada, Labour Costs in Canada, Cat. 72-610 to 72-617.

3. INFLATION: SOME IMPORTANT PRINCIPLES

a) The Neutrality of Inflation - The Macro-economic Perspective

Conventional economic models usually postulate that, over a long enough time interval, the pace and pattern of real economic activity are independent of the rate of inflation. That is, over a sufficiently long time period, the prices of all goods or services produced in an economy will increase proportionately, money wages will escalate at the sum of the average rate of inflation and prevailing labour productivity growth, while other factor incomes - interest payments, dividends, rents, and profits - will increase at the same rate as total labour income.

Thus, in a mythical long-run stationary state economy, inflation remains only a monetary phenomenon. Monetary policy and the resulting inflation are neutral for the economy. Both money and inflation remain a veil to the real economy; real economic growth remains separated from the rate of inflation - and is solely dependent upon the rate of growth of technical progress and the labour force. Real economic decisions are affected only by real economic factors, such as real wages, real interest rates, real savings, and investment decisions.

This classical dichotomy between money-induced inflation and the real economy extends very neatly into the financial markets as well. That is, if the prices of all assets and liabilities change in the same proportion, then the change in the general level of prices has no financial impact as well. Everybody's real financial position would remain static as long as real economic growth was steady and the rate of inflation itself was perfectly reflected in the prices of all financial assets and liabilities. Thus, in the classical stationary state, the

market system automatically works as an indexer for goods, services, assets, and liabilities to compensate for inflation movements.

Yet most laymen will maintain correctly that the real returns to financial assets - the important factor in pension fund calculations - are affected by inflation, even over longer intervals of time. Moreover, the layman will often state that the rates of inflation of different commodities or services that are purchased do not converge in a short period of time.

The sensible layman will point out that non-neutrality takes several directions. On the one hand, over a relevant planning horizon(2), it seems absurd to claim that the rates of change in the prices of different commodities or services are uniform. Indeed, from the budgeting perspective, the public points to many non-uniform examples since 1973, particularly energy, food, and real estate prices.(3) As well, savings which are accumulated in financial assets, such as fixed income bonds, and which are not continuously turned over, suffer capital losses when inflation accelerates and experience capital gains when inflation decelerates.

Thus, it is not surprising that the layman finds it difficult to accept the appropriateness of the long-run inflation neutrality argument. Economists often seem to argue that an individual should be completely indifferent between an 8 per cent rate of inflation and/or a 2 per cent rate of inflation, as long as that individual's money earnings are advancing faster than the pace of inflation and savings are earning a positive real return. To restate this proposition in a more rigorous manner, it is assumed that individuals should be indifferent to inflation as long as it is correctly anticipated and alternatives are available for protecting purchasing power against the expected rate of inflation.

As noted, non-economists are understandably impatient with this argument for a variety of reasons. Nevertheless, part of the difference in interpretation by non-economists relates to how long a time horizon is taken up with the "long-run" solution. We have sympathy for the practical problems which must be faced in the real world of variable rates of inflation, capital losses, and limited financial instruments available to protect savings. Thus, while in theory the position that over a sufficiently long time period inflation is neutral is irrefutable, in practice it is not terribly useful to policy-makers.

Associated with the traditional economic theory that inflation is neutral over the long run is another argument that postulates that in the long run, inflation is a monetary phenomenon. That is, the rate of inflation is determined by the rate of expansion of the money supply over and above the real growth of the economy. In the long run the real growth of the economy, as we have noted above, is independent of the rate of growth of the money supply; however, neoclassical economists do

admit that in the short run the real growth rate of the economy can be influenced to a rather dramatic degree by the growth of the money supply. Thus, neoclassical economists admit that in the short run there can be some trade-off between the rate of inflation and the level of unemployment, but in the long run, no such trade-off can exist.

The implication of this is that over a short period of time, if the government desires to reduce the level of unemployment below the so-called "natural rate,"(4) it can do so temporarily through an expansion of the money supply beyond the rate necessary to maintain price stability. However, as a consequence of this policy move, the rate of inflation will begin to increase and over time, if the government insists upon keeping the unemployment rate below the natural rate, it will be forced into ever-increasing expansion of the money supply, accompanied by accelerating rates of inflation. Eventually the government would have to abandon its policy, the unemployment rate would return to the natural position, but the resulting equilibrium level of inflation would be much higher than the initial equilibrium rate. Hence, in this particular example, the main result of effecting a temporarily lower unemployment rate is a higher, but eventually stable, rate of inflation.

The previous discussion on the neutrality of inflation suggested that individuals should be indifferent between different rates of inflation, as long as they are stable over time. However, this example illustrates that, while it is possible to have different stable rates of inflation at different points of time, during transitionary periods the rates of inflation can increase - and the consequences of this acceleration are rather dramatic for debt instruments. While the rate of interest will tend to increase to reflect the higher rates of inflation, the yields on old debt will rise only as the value of that debt declines.

Hence, in this example, when the rate of inflation increases from one level to a higher and eventually stable level, holders of old debt will suffer a rather dramatic capital loss during the transition period - and as well in equilibrium. Thus, while individuals should be indifferent between two different but stable rates of inflation, they cannot be indifferent to two different but stable rates of inflation if one follows upon another as a result of government policies. The possibility of these so-called equilibrium rates of inflation rising over time is quite likely, and as we note in the following section, this appears to have been the case in Canada and in the United States.

Returning to the proposition that the rate of inflation in the long run is determined by the rate of expansion of the money supply, there are the associated problems that are created by external shocks - such as the OPEC price increases, agricultural supply shortages, etc. These external, non-monetary events can result in a boost in the national rate of inflation; as well, such shocks can provide deflationary real economic pressures leading to higher levels of unemployment. In the absence of any monetary policy changes, such as money supply increases to

validate the higher inflation rates, the unemployment rate would rise and eventually this would bring about a decline in the rate of inflation back to the pre-shock equilibrium level.

But when the central bank validates the higher shock-induced rate of inflation in order to minimize the employment losses, one could argue that there is a social responsibility on the part of the government to assist also those individuals who are hurt by the higher rate of inflation.

In effect, in circumstances where external shocks suddenly increase the rate of inflation, and that higher level of inflation is sustained through public actions, government policies assist some individuals who would otherwise be unemployed - but at the cost of hurting others who might be living off fixed incomes, most notably pensioners or their dependants. While the validation of the higher inflation rate might stabilize that higher pace to become the new equilibrium rate, it clearly has negative consequences on the financial market and holders of debt instruments. Thus, there appears to be a case here which justifies a role for government involvement in the indexation of post-retirement pensions and assisting private companies to offset the capital losses incurred by their pension funds, stemming from the increase in the equilibrium rate of inflation. In essence, if the higher rate of inflation is government-induced, then governments should compensate the losers - in this case, recipients of fixed incomes.

There also appears to be some evidence, based on cross-section international inflation comparisons, that higher average rates of inflation are associated with greater inflation variability. Since greater variability can be translated into greater uncertainty, this has a negative effect of increasing the average errors involved in short-term inflation projection. As Edward Foster has noted, "if higher rates of inflation mean more variable rates, anticipation can never catch up; the average error in anticipation will increase and so, barring costly changes in contracts, must the average extent to which income and wealth are being redistributed by unanticipated changes in inflation."(page 396)

Foster provides some corroborative evidence to support the contention that a distinct correlation exists between inflation rates and the variability of inflation among twenty-three industrial countries. Among the evidence cited are the statistics summarized in Table 9.

The greater variability of inflation and higher rates of inflation will result in greater risks being associated with the holding of debt instruments and equities, and hence will tend to lower the real rate of return on these instruments. Moreover, in the short term, the greater variability will tend to have depressing impacts on investment spending and consumer spending and will, therefore, generate some short-term deflationary effects on the economy. In effect, the validation of higher

rates of inflation brought about by external shocks or attempts to buy some lower levels of unemployment in the short term, only at the expense of a resulting higher equilibrium rate of inflation, will have some rather important non-neutral consequences for the economy. Thus, the rather straightforward argument that an individual should be indifferent between two different rates of inflation does not hold up when one considers how the economic system moves from one equilibrium rate of inflation to another, and when one considers that there is a large stock of debt instruments outstanding in the economic system which were originally issued at a variety of different inflation rates.

b) Measurement and Stability of Inflation

There is the additional important concern about what particular index should be used to measure the rate of inflation.

It is quite possible that different rates of inflation may result from the use of the different price indexes and, indeed, that the rates of inflation which may be pertinent to one group may not be applicable to another. This results from the fact that the spending patterns of individuals, families, businesses, and governments are not the same, while the composition of goods and services used in the construction of the most common price indexes also can differ dramatically.

For example, it has generally been assumed that, if a separate consumer price index were to be constructed for low income families, the recorded rates of inflation experienced by low income families would have been significantly higher than the rate of inflation experienced by middle class families over the past five-year period in Canada. In fact, such an exercise was conducted recently by Statistics Canada and reported in its April 1978, Canadian Statistical Review. This article notes that although the present consumer price index (CPI) is most applicable to middle income families, the rates of inflation generated by this index were almost identical to the rate recorded by a revised CPI based on the spending patterns of low income families in Canada. Indeed, over the period June 1973 to June 1977, the consumer price index for the official target group recorded an average annual increase of 9.3 per cent, while the consumer price index for low income families registered an average annual increase of only 9 per cent.

This similarity in the movement of the two price indexes reflected the fact that, "over the period as a whole, food prices rose more than other prices; this, other things being equal, would result in a higher all-item series for the low income group which spends relatively more on food than the official target group. However, the impact of food was offset by the fact that the price increase for shelter was higher for the target group than for the low income families. This in turn results from the situation in which (a) the price of home ownership has been escalating much faster than that of tenancy, and (b) home ownership is

more important to the target group than tenancy and vice-versa for low income families."(Page 11)

This exercise suggests that although the consumer price index is geared to a specific group in Canada and not generally applicable, the errors that result from using the rates of inflation as measured by the consumer price index for other demographic groups are not likely to be serious, even over long periods of time.(5)

While the results of the study by Statistics Canada tend to be reassuring, at least with regard to the validity of the consumer price index for various demographic groups, this does not mean that the consumer price index is a relevant index for other sectors - the business sector, the government sector, and within the business community for individual business firms. For example, if one compares the movements of the consumer price index and the GNE (Gross National Expenditure) price deflator since 1971, one will find both a sharper acceleration in the rate of inflation, as measured by the GNE price deflator, with the rate of inflation peaking at just under 15 per cent in 1974 and a correspondingly sharper deceleration of the rate of inflation, according to this index. Over the entire 1971 to 1977 period,the GNE price deflator has increased at an average annual rate of 8 per cent. This, compared to an average annual rate of 7 per cent of the consumer price index and the cumulative increase for the GNE deflator, was just under 71 per cent, as compared to just under 61 per cent increase for the consumer price index. Hence, over a relatively short period of time there are rather large differences that result in the overall rates of inflation, as measured by the consumer price index and the GNE price deflator.

Furthermore, there are some problems in determining whether the rate of inflation actually peaked recently in Canada, and whether or not there is a distinct downward trend in the rate of inflation at present. The trend of inflation again is important for pension fund managers who need to forecast future movements in debt instrument yields and equity prices, and as well for the use of the excess interest model.

The figures in Table 10 include two other price indexes, in addition to changes in the consumer price index and the GNE price deflator. The rationale for the two other indexes presented in Table 10 has been provided by Mr. A. Meguerditchian, the head of the analysis section of the GNP division of Statistics Canada in his article in the April 1976 issue of The Canadian Statistical Review.

> "The rapid price increases of the last three years have obviously been an international phenomenon, a fact which is frequently alluded to but which appears to have received little quantitative analysis in terms of its effects on the measurement of Canadian prices. However, given the exceptionally high rates of change in foreign sector prices in the past few years, and given the importance of external trade to the Canadian economy, it is essential

that export prices be taken into account when increases in the GNP index are analyzed...When measures of demand prices such as the final domestic demand deflator and the consumer price index are considered, it is often important to determine how much of a given price increase is due to Canadian production prices and how much import prices." (Page 5)

Consequently, the price index entitled GNE ex exports attempts to eliminate the impact of foreign pressures on the GNE price deflator. Since exports are sold on international markets, the prices of the exports are most sensitive to these international pressures. The price index entitled domestic demand is equal to the GNE ex exports deflator plus imports. This index takes into account the effect of domestic production, as well as imports on the prices of goods and services purchased by Canadians.

In comparing the movements of these various indexes, we find that for the CPI, the last peak in rate of inflation occurred in 1974-75, for the GNE price deflator in 1974, for the GNE ex exports in 1976, and for the domestic demand deflator, in 1974. Moreover, with the exception of the consumer price index, the remaining three display a downward trend in the rate of inflation, at least between 1976 and 1977. The rate of inflation in 1977 ranges between 6.1 per cent and 8 per cent. Hence, although there is much discussion about the rate of inflation, there are obviously several measures of the rate of inflation, each of which is appropriate for a specific group or circumstance. The various measures that can be used to calculate rates of inflation do experience different movements over time.

Furthermore, most indexes are assumed to overestimate somewhat the true pace of inflation because of quality improvements which cannot be captured completely in the price series. (For example, consider the quality improvements in automobiles, medical services, transportation systems, etc. that have emerged over the past quarter-century. In a nutshell, the commodity or service base is never completely identical in future periods to what it was in the past.)(6) In addition, the periodic revisions in the weights used in the construction of the various indexes - revisions that are made necessary because of different relative price movements, as well as changing composition of expenditures - also result in some changes in the rates of inflation. For example, Ryten and Wells, in their article in the August 1975 issue of The Canadian Statistical Review, compared the growth rates of real GNP and implicit price deflator using the GNE deflator, based on the old 1961 weights and the new 1971 weights. Over the period 1971 to 1974, they found that the new 1971 weights resulted in a reduction in the average annual growth rate in real GNP of 2/10 of 1 per cent per year, or a cumulative reduction of 7/10 of 1 per cent in the overall growth rate. In terms of the rate of inflation, as measured by movements in the GNE price deflator, the new 1971 weights resulted in an increase of 3/10 of 1 per cent in the average annual rate of inflation between 1971 and

1974. This was a cumulative increase of nearly one percentage point over that period, as compared to the rates of inflation using the 1961 weights. Obviously then, one must be very careful in the selection of a price index and the use of this price index as it relates to the whole issue of indexing post-retirement pensions.

As a footnote to this section, we suggest that CPI still appears to be the most appropriate index to be used to determine the degree of escalation of post-retirement incomes, as this index measures the actual price increases faced by individuals. While the CPI represents an appropriate price series from the perspective of the individual, from the firms' point of view, the cost of living changes may or may not be identically mirrored in rising selling prices for its commodities or services.

c) Inflation and Market Rates of Return

(i) Expected and Unexpected Inflation, Anticipated and Unanticipated Inflation

It is necessary to make a distinction between expected and unexpected inflation and anticipated and unanticipated inflation.(7) Inflationary expectations can be either correct or incorrect. A correctly perceived inflation rate is perfectly expected. For example, if the prevailing 7 1/2 per cent rate of inflation in 1978 rises to 10 per cent by 1979 and 12 1/2 per cent by 1980 and these successive 2 1/2 percentage point increases in the rate of inflation in 1979 and 1980 are correctly perceived or expected, then this should result in a lender demanding compensation for the accelerated price erosion of his capital.

But a path of inflation which is correctly expected may still present problems in that a distinction must be made between the ability or inability of the lender to find a means of protecting his income or wealth position. For example, in the recent period of accelerating inflation, the typical Canadian has had few options for protecting his savings against inflation - although housing prices have tended to exceed the general rates of inflation. But in terms of money market instruments, the rates of return available to small lenders through the banking and financial system have not compensated for expected rates of inflation. An accurate expectation of future inflation need not mean that it is completely anticipated. Indeed it is the frustration of correctly expecting inflationary change but being in no position to anticipate it through adjustments which has a lot to do with the frustrations in our society.

In summary, if the prices of all goods, all services, all assets, and all debts were to move together in the same proportion, the changes in the general level of prices would have no real economic significance. Everybody's real economic income and wealth position would be protected in that the real financial positions would remain static or constant.

Yet since the commodity price changes tend to occur at different rates, and over a practical time horizon, there is no reason why all forms of assets and liabilities should increase in price at the same rate.

(ii) The Classical Relationship between Inflation and Market Rates of Return

Classical economic principles generally state that the real return to different types of investments, both physical and financial, is independent of the pace of inflation. At the core of this hypothesis is the theoretical argument that the nominal return will adjust to changes in inflation so as to maintain the underlying real rate of return. The basic classical proposition relating inflation to its impact on assets is commonly attributed to Irving Fisher who concluded that the nominal interest rate in the capital market fully adjusts to movements in future expected inflation rates. This conclusion remains at the core of much of modern economic analysis today.

This proposition, which is still widely used and accepted in monetary finance, and macro-economic theory, has also been extended to return to equities as well as fixed income securities. At this juncture we will deal with two basic securities in a hypothetical portfolio; securities with a fixed dollar coupon but a variable market price and equities which pay dividends and have a variable market price.

Thus extended into either the bond or common stock market, the original classical principle is that either instrument may be viewed as a hedge against inflation in that the nominal yields will rise in proportion to revisions in inflationary expectations. The respective real rates of return for equities or fixed income bonds will be independent of the expected rate of inflation. There is an important distinction which economists make between expected and unexpected inflation. The former represents correct perception and would indeed immediately impact through lender's and borrower's behaviour in the market-place; the latter would impact on the yield structure, but only with some time delay.

An algebraic and numerical example of the operation of the Fisher principle is included here. If lenders and borrowers hold the same price expectations, then the market or nominal rate of interest (i) will equal the real rate of interest (r) plus the expected annual rate of inflation ($\dot{p}^e$) during the planning horizon.

Thus the Fisher principle holds that in equilibrium:

$$i = r + \dot{p}^e \qquad (1.1)$$

Equation (1.1) can be rewritten to account for a lagged adjustment of nominal yields to expected inflation, where the adjustment factors are said to be greater than zero but less than unity. As well, the princi-

ple can be rephrased in terms of a real after-tax rate of return, where the applicable marginal tax rate (t) is used. Therefore:

$$r\ (1 - t) = i\ (1 - t) - b\ \dot{p}^{e} \qquad (1.2)$$

where (b) represents a coefficient of adjustment. If one assumes instantaneous adjustment, that is b=1, then the nominal rate of interest required to generate the same real after-tax rate of return, regardless of the rate of inflation is:

$$i = r + \frac{(1\ \ )}{(1-t)}\ \dot{p}^{e} \qquad (1.3)$$

In a world of no taxes, and instantaneous adjustment to inflationary expectations, a 1 per cent increase in the rate of expected inflation results in a 100 basis point rise (or 1 percentage point) in the market rate of interest. If expected future inflation rises from 3 per cent to 4 per cent, with the underlying real rate of return remaining at 2 per cent, then the market rate of interest would rise from 5 per cent to 6 per cent.

In a world of taxes, when the level of inflationary expectations rises, the nominal rate of interest must increase more than proportionately. For example, with a marginal tax rate of 50 per cent, the nominal rate of interest in the above example would have to rise by two percentage points.

This key point needs underscoring. The increase in the level of inflationary expectations should, in a fully anticipated way, be followed by a more than proportionate rise in market interest rates.(8) But the essential principle remains intact; financial instruments should be a hedge against inflation in that nominal yields reflect any changes in inflationary expectations. This neutrality only holds in the case of new financial investments. We point out below that the fixed income investments which are held to maturity in a rising inflation environment do not yield the same opportunities.

The application of the Fisher principle to equities follows in a similar fashion. As Zvi Bodie notes in an article in the May 1976 Journal of Finance:

> "Economic theorists have long considered common stocks an inflation hedge in this sense because stocks repesent ownership of physical capital whose real value is assumed to be independent of the rate of inflation. This independence implies that a ceteris paribus change in the rate of inflation should be accompanied by an equal change in the nominal rate of return on equity. Indeed this view is most commonly expressed in somewhat looser terms as a positive correlation between the nominal rate of return on equity and the rate of inflation." (Page 460)

Despite the popular notion of the 1960s that real return to common stocks was protected against inflation, the empirical observation that this has not been the case has been discovered recently in the economic literature. There has been a spate of articles published in leading journals to support the fact that the real value of equities is affected by the rate of inflation. This literature has several dimensions - the theoretical framework and the empirical observations. As noted earlier, classical economic principles imply that the current money value of (unleveraged) equities should rise in proportion to rates of inflation. But a host of institutional and other factors helps explain why equities have not been an effective hedge against inflation. As John Lintner notes in a May 1975 Journal of Finance article, in times of inflation, real return to equity ownership is impaired by

> "specialists - involving such matters as inability to maintain profit margins in the face of rising labour and material costs, the use of fifo instead of lifo accounting methods and the insistence on the use of historical rather than replacement costs for fixed assets both in accounting dogma and tax law - are seriously incomplete (however important they may be in practice). Even if all these impairments of real return in times of inflation were completely eliminated by the use of replacement cost depreciation and lifo accunting for inventories, and even if real profit margins and rates of growth in unit sales are always maintained, a company's relative dependence upon outside financing will necessarily be higher the higher rate of inflation, whether expected or unanticipated. Moreover, this greater relative dependence on outside financing required by an increase in realized inflation during any period will necessarily reduce the value of outstanding equity, and consequently also reduce the real rate of return realized on equities during the period. These results hold whether new equity or added debt is issued to meet the added financing required to maintain real rates of growth in the face of either an unexpected spurt of inflation or higher rate of fully anticipated inflation. These adverse effects of an increase in expected rates of future inflation on equity values and on real holding-period returns during the transition period from one rate of inflation to a higher rate, however, will be greater than those of an equally large increase in unanticipated 'transient' inflation." (Page 269)

Recent empirical finance literature has been quite clear on the point that common stocks have not served as a hedge for inflation for a rather long period of time. Once again Lintner cites his own and other research to back up this point for the U.S. market.

Studies undertaken in Canada appear consistent with the U.S. findings vis-à-vis the negative correlation between inflation and real rates of return to equities. Indeed, in his study Pesando summarized five recent studies which support this empirical conclusion. Needless to

say, the five studies indicate that realized inflation and expected and unexpected inflation depress the real returns to common stocks.

While various studies have demonstrated that equities have not been a good hedge against inflation, particularly in the recent period of accelerating inflation, studies on the adequacy of debt instruments have demonstrated that over the period of slow growth of the rates of inflation, 1959-1971 (see the study by Carr, Pesando, and Smith 1976), nominal yields have increased on about a one-for-one basis with the increase in the expected rate of inflation. The study by Carr et al., however, did not find that the nominal rate of interest increased more than proportionately to the increase in the expected rate of inflation as would be suggested by the Fisher principle in a realm of positive tax rates. There have not been any other studies that examined the relationship between return on debt instruments and inflationary expectations covering the period since 1972 to the present. We would expect that during this period there has been most likely a less than one-for-one increase in the nominal return relative to changes in expected rate of inflation. Most likely the nominal return has lagged behind changes in the expected rate of inflation. Indeed, in the study by Carr et al., there was not an instantaneous adjustment in the nominal interest rate to changes in inflationary expectations, but rather, there was a lagged adjustment that extended upwards to three years.

Furthermore, even if the nominal yields on debt instruments do increase proportionately to changes in the level of inflationary expectations, during periods of accelerating inflation, (or increases in the long-term equilibrium rate of inflation), holders of long-term debt instruments will experience a rather substantial decline in the capital value of these assets. Indeed, they will only be able to earn the higher nominal yields, and thus a constant real rate of return, if they turn over their assets and purchase newly issued debt instruments - but this turnover will result in portfolios actually suffering a capital loss.

Hence, while the Fisher principle is theoretically correct, in practice yields do not adjust instantaneously to changes in inflationary expectations, and moreover, substantial capital losses can occur in the process of rolling over one's assets in order to keep abreast of the higher nominal yields resulting from higher rates of inflation.

There is one further point which requires clarification. The inflation adjustment clearly does not hold well in the short run, particularly when one recognizes the administered nature of short-term interest rates in Canada, and the specialized features of other rates, such as mortgages. While the Fisher principle is perfectly consistent with supply and demand explanations for interest rate movements, active market participants are understandably impatient with explanations that seem to ignore other non-inflation related factors which determine the supply and demand for funds in a particular market.

Thus, for all practical purposes during a short-term transition period, one should expect a rather loose relationship between nominal yields and levels of inflation. Indeed, the experience during the past five to six years has been exactly that, namely, pension fund managers have been unable to earn real rates of return commensurate with the assumptions built into the pension plans and, in many cases they have been unable to earn postive real rates of return.

d) The Winners and Losers from Inflation

It is generally accepted that debtors gain and creditors lose from inflation, since the former group is repaying debts in dollars that have a lower real purchasing power than when the funds were borrowed. It is usually argued that, since government is the largest net debtor in the system, it would be the prime winner when inflation accelerates. On a net basis, individuals tend to be creditors, even taking into account their mortgage debt; consequently, individuals are the principal losers from inflation. When the inflation rate is constant, regardless of the level, and if nominal yields have fully adjusted to the prevailing rate of inflation, then neither creditors nor debtors will lose or gain from that prevailing rate of inflation.(9) The interest payments and the interest returns will reflect fully the depreciation of capital, and thus will adjust so as to ensure that creditors do not experience capital depreciation and debtors do not gain from the depreciation.

Clearly then, the debtor-creditor argument on who gains and who loses from inflation holds only during periods when inflation is either accelerating or decelerating or during periods in which the changes in inflation rates are either unexpected or unanticipated.

In reality, the extent of the gains and losses to various groups and among income classes is hard to measure, particularly when nominal returns adjust quickly to inflation changes. In the government case, inflation affects their debt repayments, and additional revenues would have to be raised in order to pay the higher borrowing costs when inflation accelerates. Business tends to be a net debtor on average - thus, higher borrowing costs may ultimately translate into higher producer prices for goods and services.

Indeed, it is usually thought that in an accelerating inflation environment, when the inflation is largely unexpected, producer prices respond earlier to the new inflation reality than labour costs. This was particularly the case when negotiated labour contracts did not include escalation clauses, and were set on a two-to-three year basis. Once again, it is difficult to draw a definitive conclusion in terms of the winner-loser effect simply based on the fact that business tends to be on average a net debtor, because of the lead-lag relationships in the response to inflation.

Despite the conceptual problems involved in such evaluations, several studies have grappled with the issue. Citing just two of them, the general impression is that individuals at the upper end of the income spectrum, and business, generally appear to lose from higher rates of inflation. Minarik, in a study based on the U.S. 1973 to 1975 experience, published by the Brookings Bulletin, concluded that, "inflation reduces most (of) the real income of the rich; for the bulk of the population, the effects of inflation are modest." (Page 10)

Ironically, that conclusion depends upon an expanded concept of family income. In terms of a standard concept of income, Minarik pointed out that in response to higher rates of inflation, the rich did become somewhat richer and the poor somewhat poorer. "At low income levels, real income is reduced by slightly less than half of 1 per cent, mostly because some transfer payments lag behind prices. At the middle income levels, inflation has very little effect since most income here is in the form of wages and salaries, and home owners benefit from contractually fixed mortgage payments. At the upper income levels, however, income flows are swelled by the rapid rise of interest rates, so these households appear to benefit from inflation by about half of 1 per cent." (Page 8)

But, in terms of a more comprehensive measure of income, which covers standard current cash income of the household as well as other items, such as income in kind, balance sheet changes resulting from depreciation of the cash value of bonds, the lagging of corporate retained earnings and the appreciation in home values and taxes, Minarik discovered rather substantial real income losses from a higher rate of inflation for those families with income in excess of $25,000.

Minarik also verified the common belief that the elderly in the United States are losers when the inflation rate increases. "At low and middle income levels the elderly are more adversely affected by inflation because their income is largely from property. At higher levels most income is from property, regardless of age, so the elderly fare little differently than others." (Page 9) Hence, the wealthy and the aged appear to be the principal losers during a period of accelerating rates of inflation.

Jenkins, in a study on the social rate of return in Canada empirically examined the effects of inflation and taxes on business and government. He discovered that in Canada, higher rates of inflation tend to have a depressing effect both on the social rate of return and on private rates of return to business - and that higher inflation tends to benefit government.

Prior to the introduction of indexation of personal income taxes, individuals also lost out to government through higher rates of inflation; at present, the full extent of the inflation-induced losses to

individuals is minimized in Canada by the indexation of personal income tax exemptions.(10)

But, to the degree that indexation has forced the federal government to incur higher deficits, it might follow that the personal income tax rate could actually be higher than it otherwise would have been to finance the higher deficits. Alternatively, the high deficits could result in a reduced level of government spending. These various other implications for government finance tend to cloud the interpretation of the income distribution effects stemming from the higher rates of inflation and the indexing of personal taxes.

Returning to the business sector, in an accelerating inflationary environment, many companies experience paper profits stemming from the higher value of their inventories. In turn, they pay taxes on these paper profits. In addition, the inability to depreciate their capital investments at the replacement values results in higher tax liabilities for companies and hence, reduced after-tax cash flows. Thus, according to Jenkins, business loses and government gains when inflation accelerates. But, in terms of the income distribution effects on individuals, once again it is difficult to assess the effects, since one cannot easily disaggregate the real losses to business into their constituent elements - higher prices, lower dividends to shareholders, and reduced wage gains to workers.

In conclusion, then, the United States studies imply that high income and elderly individuals are the principal losers from higher rates of inflation. Jenkins stresses that government gains and business loses as a result of inflation in Canada. The elderly in Canada whose sole source of income is OAS and GIS from the federal government, and perhaps income supplements from the provincial governments, are protected from higher rates of inflation, since these benefits are fully indexed, albeit with a time lag. Those who will be adversely affected are the individuals who receive some income from employer-sponsored pension plans that are not fully indexed for inflation and individuals receiving return to capital where the nominal returns fall significantly behind the rate of inflation.

e) Accelerating Inflation Rates, Unfunded Liabilities, and Experience Deficiencies

As we pointed out in the introduction to this study, accelerating rates of inflation during the early and mid-1970s have caused serious problems for many private pension funds. The higher rates of inflation, and the commensurately higher rates of increases in wages and salaries, have increased the future liabilities for many of these pension plans. At the same time, the inability of nominal returns to keep abreast of high rates of inflation has limited the ability of many funds to earn a real rate of return adequate to cover the future liabilities. In turn, the value of old outstanding bonds declined during this period as well.

Hence, many funds found themselves with rather substantial unfunded liabilities and large experience deficiencies.

The Financial Executives Institute of Canada surveyed approximately one-third of the pension funds covered by Statistics Canada. The FEI study was based on 198 responding corporations with a total net capital employed of $66.5 billion in the latest fiscal year. An important conclusion of the study was the following:

> "Approximately 70 per cent of the respondents had plans in a deficit position. The rate of change in the dollar magnitude of unfunded past service liabilities and experience deficiencies continues to grow at an alarming pace. Unfunded liabilities and experience deficiencies were 5.7 per cent of net capital employed at latest fiscal year ends. Wage and salary escalation in excess of actuarial assumptions, followed by performance of capital markets and early retirement experience were held to be the significant factors leading to deficit positions."

Nevertheless, their conclusion may be overstated in the sense that the scientific value of the survey is somewhat limited when it refers to experience deficiencies or unfunded liabilties. In part, the validity of the survey is questionable because of the no response aspect to these questions. Thus according to the FEI figures, 25.5 per cent of the plans reported that they had unfunded liabilities; most of the others didn't answer the question.

This survey of pension fund performance merits discussion in that it illustrates to some extent the impact of rising inflation on private pension plans. As of March 1976, there were 181 firms covered in the survey, ranging in size from very small firms (under $25 million in net capital employed) to very large firms (over $1 billion in net capital employed). In the latest fiscal year, only a few employers (2.8 per cent) had the market value of their pension funds valued between 40 to 50 per cent of net capital. Most employers (85 per cent) valued their plans at below 30 per cent of their net capital employed.

As Yves Guérard notes in a speech entitled, "Pension Funds and Their Impact on the Direction of the Economy":

> "The FEI Survey covering approximately one-third of the pension plans showed that 70 per cent had a deficit; the deficits amounted to 25 per cent of the assets. Using that percentage means that if the existing funded plans had fully amortized their deficits, aggregate assets would be $50 billion instead of $40 billion." (Page 15)

Returning to some of the specifics of that survey, the statistics in Table 12 relate the book value of pension funds to the market value of the funds. Note that the book value exceeded the market value in

1976 in 42.2 per cent of the cases, whereas in 1970, the book value exceeded the market value in 62.3 per cent of the cases. In other words, for a large number of the plans, in 1976 the book valuation of funds' portfolios was above the actual market value of the portfolios. This, of course, is consistent with the accelerated inflationary environment which existed between 1970 and 1976.

In Table 13 we set out the survey's estimates of unfunded past service liabilities as a percentage of pension fund assets at market value. It should be noted that unfunded liabilities for service costs must be funded over periods, not on a yearly basis.(11) In 1970, 74.5 per cent of the plans in existence either had no unfunded liability, or there was no response to the survey question. In 1976, the latest fiscal year for which data are available, only 40.3 per cent of the plans were in the same situation. Thus, it is not surprising that unfunded liabilities as a percentage of pension fund assets have increased dramatically and, indeed, Table 13 supports this view. For example, the number and percentage of firms with a ratio of unfunded liabilities to the market value of the fund in excess of 50 per cent, has risen from 4.1 per cent in 1970 to 7.5 per cent in 1976.

The figures in Table 14 illustrate a distinction between experience deficiencies and unfunded liabilities. Pesando and Rea note in their book,

> "Experience deficiencies arise, in effect, when the actuarial valuation of a pension plan indicates that the assumptions on which the employer's contributions were based were not borne out...During the recent period of accelerating inflation in Canada, bond prices have declined and the stock market has generally performed poorly. Thus, one would predict that all trusteed pension plans are likely to be characterized by experience deficiencies which reflect, in essence, the poor performance of their investment portfolios." (Page 34)

According to the FEI survey, in the latest fiscal year, 120 out of the 198 surveyed firms either cited no experience deficiencies or did not answer the question. Also 75 out of the 198 firms either cited no unfunded liabilities or did not answer the question.

In summary, in view of the many empirical studies which suggest that inflation tends to depress the real rates of return to equities, and which indicate as well that inflationary expectations are imputed in proportion to the nominal yields on fixed income securities, it is not surprising that private pension fund portfolios which are composed primarily of these types of instruments should see their experience deficiencies rise.

Existence of unfunded liabilities, however, need not necessarily be considered a bad thing. Indeed, it might be rather fortuitous for a company to have unfunded liabilities. The Pension Benefits Act provided

rather strict rules for companies to cover their unfunded liabilities within a given period of time. If companies having unfunded liabilities are able to earn a higher rate of return on the funds that they in effect are borrowing from the pension funds by investing them in physical assets to be used by the company, then the company, and likely the employees, will be better off in the long term. Obviously, if funds used by the firm that would have otherwise been put into the pension fund earn a lower rate of return, then the company and, most likely the employees, will be worse off over time.

Table 8
Distribution of Financial Acquisitions of Individuals and Unincorporated Businesses, 1975-1977

	1975	1976	1977
		(Per cent)	
Ratio to gross savings			
Currency and bank deposits	43.4	44.2	36.4
Deposits in other institutions	29.7	32.0	37.8
Canada savings bonds	14.8	3.7	7.8
Life insurance and pensions	29.2	31.2	32.6
Trusteed pension plans	16.5	19.5	20.1
Ratio to net lending			
Currency and bank deposits	35.1	33.4	25.3
Deposits in other institutions	24.0	24.1	26.3
Canada savings bonds	12.0	2.8	5.5
Life insurance and pensions	23.6	23.5	22.7
Trusteed pension plans	13.3	14.7	14.0

Source Statistics Canada, Financial Flow Accounts, Second Quarter 1978, Cat. 13-002.

Table 9
Simple Correlation Coefficients Between Average Rate of Inflation and Variability in Rate of Inflation, 23 Advanced Economies

	1954-1975	1961-1975
	(Per cent)	
23 countries	.93	.93
22 countries (excluding Iceland)	.87	.82
17 countries	.86	.79
12 countries	.86	.76

Note Computed from consumer price index recorded in International Financial Statistics, various years.

Source Edward Foster, "The Variability of Inflation," Review of Economics and Statistics, Vol. LX, No. 3, August, 1978, p. 349.

Table 10
Canadian Inflation Trends, 1971-1977 - Annual Percentage Rates of Change

	CPI	GNE	GNE ex. exports	Domestic demand
			(Per cent)	
1971	2.9	3.2	4.1	3.5
1972	4.8	5.0	5.3	4.8
1973	7.6	9.1	6.7	7.2
1974	10.8	14.9	8.7	11.9
1975	10.8	11.2	10.0	10.9
1976	7.5	9.5	11.4	8.8
1977	8.0	6.5	6.1	7.6
1971-1977	7.0	8.0	7.5	7.7
Cumulative 1971-1977	60.8	70.9	66.0	68.2

Note CPI - Consumer Price Index
GNE - Gross National Expenditure deflator.

Source Department of Finance, Economic Review, April 1978.

Table 11
Selected Price Index Changes in Canada, 1961-1977

	1961-1971	1971-1977	
	Total	Average annual	Total	Average annual
		(Per cent change)		
CPI				
Food	33.5	(2.9)	60.8	(7.0)
Housing	31.3	(2.8)	80.1	(8.8)
Clothing	28.7	(2.6)	41.0	(5.0)
Transportation	29.9	(2.6)	53.3	(6.3)
Health and personal care	42.4	(3.6)	55.0	(6.5)
Recreation and reading	35.7	(3.1)	42.7	(5.2)
Tobacco and alcohol	28.5	(2.5)	43.8	(5.3)
GNE				
Consumer spending	38.1	(3.3)	70.9	(8.0)
Government spending	69.2	(5.4)	91.3	(9.7)
Business	37.6	(3.2)	67.2	(7.6)
Residential construction	45.4	(3.8)	105.3	(10.8)
GNE - exports	41.6	(3.5)	66.0	(7.5)
Domestic demand	38.1	(3.3)	68.2	(7.7)
ISPI				
Food and beverages	22.0	(2.0)	73.9	(8.2)
Leather	30.3	(2.7)	73.2	(8.2)
Textiles	3.5	(.3)	50.4	(6.0)
Rubber and plastic	8.4	(.8)	48.1	(5.8)
Clothing	32.2	(2.8)	67.3	(7.6)
Wood	45.3	(3.8)	88.5	(9.5)
Paper	18.3	(1.7)	93.5	(9.9)
Metal fabrication	24.7	(2.2)	72.0	(8.1)
Machinery	n/a	n/a	58.7	(6.8)
Transportation equipment	7.0	(.7)	22.5	(2.9)
Primary metals	32.3	(2.8)	90.5	(9.6)
Electrical products	12.0	(1.1)	47.2	(5.7)
Petroleum and coal	13.9	(1.3)	135.3	(13.0)
Chemical	2.6	(.3)	75.9	(8.4)

Note CPI - Consumer Price Index
GNE - Gross National Expenditure deflator
ISPI - Industrial Selling Price Index

Sources CPI, GNE - Department of Finance, Economic Review, April 1978.
ISPI - Statistics Canada, Canadian Statistical Review, Cat. 11-003, April 1973, April 1978.

Table 12
Book Value of Pension Fund as Percentage of Market Value

Range of book as percentage of market	1976 Fiscal year		1970 Fiscal year	
	(Number)	(Per cent)	(Number)	(Per cent)
75 and under	2	1.2	-	-
75.1 to 90	11	6.6	7	6.1
90.1 to 100	83	50.0	36	31.6
100.1 to 110	68	41.0	53	46.5
over 110	2	1.2	18	15.8
Total	166	100.0	114	100.0
Not given	32		84	

Source Financial Executives Institute of Canada, Report on Survey of Pension Plans in Canada, March 1978, p. 60.

Table 13
Unfunded Past Service Liabilities as Percentage of Pension Fund Assets at Market Value

Range of unfunded liabilities as percentage of pension fund assets	Fiscal years			
	Latest		1970	
	(Number)	(Per cent)	(Number)	(Per cent)
0 and not given	75	40.3	143	74.5
1 to 9.9	35	18.8	17	8.9
10 to 19.9	21	11.3	8	4.2
20 to 29.9	17	9.1	5	2.6
30 to 39.9	12	6.5	7	3.6
40 to 49.9	12	6.5	4	2.1
Over 50	14	7.5	8	4.1
Total	186	100.0	192	100.0

Source Financial Executives Institute of Canada, Report on Survey of Pension Plans in Canada, March 1978, p. 63.

Table 14
Total Experience Deficiency and Total Unfunded Liability as Percentage of Total Value of Pension Funds at Latest Actuarial Valuation Date

Range of percentage to pension fund	Respondents indicating			
	Experience deficiency		Unfunded liability	
	(Number)	(Per cent)	(Number)	(Per cent)
0 and not given	120	60.6	75	37.9
.1 to 4.9	27	13.6	19	9.6
5.0 to 9.9	17	8.6	16	8.1
10.0 to 19.9	21	10.6	26	13.1
20.0 to 29.9	10	5.1	19	9.6
30.0 to 39.9	1	.5	16	8.1
Over 40	2	1.0	27	13.6
Total	198	100.0	198	100.0

Source Financial Executives Institute of Canada, Report on Survey of Pension Plans in Canada, March 1978, p. 65.

4. INDEXING AND GOVERNMENT SPENDING

a) Is Indexing Per Se Inflationary?

Indexing is a mechanism to alter automatically contractual arrangements so that they can reflect price changes. Economists and practitioners are divided over the general impact of indexing on the government target for a socially accepted inflation rate. Milton Friedman, widely recognized as a "hawk" on inflation, has been quite vocal in favour of expanding the use of indexing in the United States.

In a debate published by the American Enterprise Institute, Friedman notes:

> "Indexing per se will not, in my opinion, do anything to reduce inflation. But what it will do will be to make it easier to terminate our inflation. It will make it easier by reducing the incentive for governments to inflate and by making withdrawal pains from inflation less severe." (Page 2)

Robert MacIntosh, executive vice-president of the Bank of Nova Scotia, argues that the degree to which the federal public service pension plans are indexed in themselves removes some of the will to fight inflation. In his article entitled "The Great Pension Fund Robbery," MacIntosh notes:

> "The growing inequity of the arrangements which now exist as between the public and private sectors of the economy is, however, only part of the story. What is really disturbing is to assess the

impact of public policy when the federal civil service has managed to insulate itself from inflation. Can it truly be said that the thinking of politicians of the civil service is wholly unaffected by the fact that their own personal involvement with inflation is less than that of the general public?" (Page 258)

To the degree that indexing insulates the various participants from the worst features of inflation, it may be true that indexing represents a "giving in" to the inflation tide. Nevertheless, it is our opinion that indexing itself should be neutral for inflation and that the battle over the inflation issue is best considered from another viewpoint.

By and large the proponents who are in favour of indexing argue the merits of the case on equity grounds. As we note in this report, inflation has been rather non-neutral on private pension benefits since 1970. And if the value or political judgment is made that the real incomes of pensioners are too high, then the inflation process surely cannot be described as the best mechanism for reducing their real incomes.

Albert Fishlow, in an article surveying inflation in Brazil, noted that widespread indexation becomes a necessity in a period of hyperinflation in order to restore the allocative mechanism to the market system. But he notes as well that "indexing is not a neutral and mechanical instrument. Even if it were not manipulated directly, as it was in Brazil, widespread monetary correction by its very character is not a substitute for government intervention, but a means of it." (Page 279)

He argues that at a very low rate of inflation it is better not to go the indexing route, since it reduces the effectiveness of automatic stabilizers that are built into fiscal systems. In sharp contrast to statements attributed to Milton Friedman on the Brazilian experience, Fishlow argued that "the reduction of inflation in Brazil owes little to indexing, but a great deal both to direct governmental intervention and to successful monetary and fiscal policy." (Page 262) In essence, Fishlow found little in the Brazilian experience of widespread indexation of taxes, financial instruments, exchange rates, and wages to recommend to the United States. In his view inflation was not sufficiently steep to break down the allocative mechanism within U.S. markets.

In a world of relatively mild inflation, James Tobin appears to favour the indexing solution and to support the concept of the U.S. government offering purchasing power bonds to pension funds.

"I have long contended that the government should make low interest bonds of guaranteed purchasing power available for savers and pension funds who wish to avoid the risks of unforeseen inflation. The common objection to escalated bonds is that they would diminish the built-in stability of the system. The stability in question refers to the effects of aggregate real demand, ceteris paribus on

a change in the price level....In the 1970s we know that the government can, if it wishes, control aggregate demand - at any rate, its ability to do so was only trivially affected by the presence or absence of the Pigou effects on part of the government debt."(Pages 16 and 17)

Thus, as is often the case, economists appear divided on the issue of inflation indexing and the attitudes towards the anti-inflation objectives. We tend to favour the view that indexing per se is likely neutral in terms of the battle against inflation, but that pension fund indexing is necessary because of equity principles. We will expand on this latter point in the following sections.

b) Indexing Pension Benefits: An Example of Inflation Indexing and Productivity Indexing

Can the Canadian economy afford private pension fund indexing? This question has been raised recently by several prominent people. Clearly the issue boils down to who or what institution is to pay for indexing and who or what institution will accept the fiscal responsibility. The Barnes (and Crozier) argument is that the economy can afford to pay for indexing, since real economic growth generates a rise in per capita incomes or a growth dividend. That is, the growth of the economy per se would create the resources. Dr. James E. Pesando, who also argues that the economy can afford to index private pensions, argues that the real question relates to the distributive effect.(12)

This section of the report, which considers the links between pension benefits and productivity growth, was stimulated by the Barnes (and Crozier) argument - though the point of departure is much different.

The segment of Canada's population which is retired and receiving a fixed annual pension during a period of zero inflation will find their standard of living declining relative to those individuals active in the labour market. In an expanding econonomy, the rate of growth of production (or output) is usually in excess of the rate of growth of employment. Historically, the difference between these two growth rates has averaged between 2 and 3 per cent per annum. The empirical reality that, on average, real output gains exceed total employment gains is often described as the economic growth dividend, for "normal" economic growth permits the standard of living of Canadians to increase.

In 1966, for example, real labour productivity (calculated as real GNP per employee at 1971 prices) was $10,335. That is, the 7.2 million employed workers in 1966 produced a real GNP of $74.8 billion. By 1977 real GNP had climbed to $122.6 billion, and the employed work-force reached 9.8 million. Thus, average real labour productivity (in 1971 prices) was $12,565 per worker in 1977, 21.5 per cent higher than the recorded 1966 productivity figure.

Stated in another way, real GNP per employee rose 1.8 per cent per annum between 1966 and 1977. This productivity gain permitted "real" per capita income to rise from $3,769 in 1966 to $5,687 in 1977, and also explained the steep gain in real labour income per employee over the same period. Thus, the nearly 2 per cent rise in average labour productivity allowed a 3.1 per cent per annum rise in real per capita income and a 3.9 per cent rise in real average labour income per employee.

If one measures the standard of living changes by per capita output movements, then the improvement in the standard of living far exceeded the gain in productivity, since Canada's population rose at a slower pace than employed workers between 1961 and 1977. Thus the productivity dividend permits an improvement in the standard of living. As well, the productivity dividend makes it easier to introduce generous social welfare programs since the dividend in theory moderates the apparent costs of income distribution to those who see their perceived incomes decline because of such programs.

Turning to Table 15, we note that a pensioner retiring in 1966 with a $2,500 per year "real" pension benefit would have witnessed an average real decline in his or her relative position by 1977 because of the inability to share in the productivity dividend which the economy generated during the retirement years. That is, even if the pension benefit were maintained its real or constant purchasing power (see column 5 of Table 15), the relative purchasing power of the "real" $2,500 would have declined quite sharply against real per capita income or real labour income per employee. In 1966 a $2,500 annual pension represented 66 per cent of average real per capita income and 53.3 per cent of average real labour income per employee. By 1977 the real benefit payment scaled against per capita real income or average labour income per worker declined to 47 per cent and 35 per cent respectively. Thus a constant real cash pension benefit is consistent with the retired sector of our population experiencing a decline in their position relative to other workers.

If the $2,500 benefit in 1966 was set in nominal or money terms, then its real purchasing power would have declined 42 per cent by 1977 (to $1,458 in constant 1971 prices), and the pensioner's relative position would have slipped even further. Indeed, the relative slippage against real per capita income is from a 66 per cent level in 1966 to a 28 per cent level by 1977 - and that slippage has two components - a 19 per cent decline due to lack of productivity indexing, a 29 per cent decline because of no inflation protection.

Since the GNP deflator rose 207.6 per cent over the eleven years 1966 to 1977, the nominal $2,500 pension benefit would have had to climb to $5,190 by 1977. The pensioner is, of course, no better off having the $5,190 benefit payment in 1977 in a world of inflation than having $2,500 in a world of zero inflation.

An adjustment to the pension benefits for productivity gains which the employed sector of the population achieved would have escalated the $2,500 real figure to an amount between $3,000 and $3,800, depending upon which variable was used for the productivity escalation factor - direct labour productivity, real per capita income growth, or real labour income gains. In order for the pension benefits to be fully indexed for purchasing power losses due to inflation and productivity gains, the nominal benefit by 1977 would have had to reach a level between $5,729 and $6,497.

A combined productivity indexing scheme and inflation indexing scheme has an escalation rate equal to the sum of the rate of increase in prices and productivity. In essence, this is equivalent to linking pension benefits in money terms to increases in the money wage level - rather than to price increases alone. An example of the latter empirical fact is set out below.(13)

Between 1966 and 1977, one observes that total wages per worker (other than in construction) rose at an annual rate of 9.9 per cent, while the average increases in the GNP deflator and the consumer price index were 6.9 per cent and 6.1 per cent respectively. Average real wage gains rose either 2.8 per cent per annum or 3.6 per cent per annnum depending upon which price index is used. It is clear that the higher wage gains figure, which is after all the average escalation rate of worker incomes, would insulate the pensioner against the inflation losses and enable the pensioner to share in the productivity growth dividend.

To summarize these main points:

1. In retirement years, those who earn a fixed nominal pension benefit face two forms of purchasing power erosion: a direct loss of purchasing power due to inflation and an indirect decline in their relative share of total output or income because they are not rewarded for productivity improvements which occur in the economy. In pre-retirement years, money wage gains generally approximate the sum of productivity improvements plus inflation.

2. The productivity dividend which society earns is intricately a part of the economic growth process. For example, the Canadian economy generated between 1966 and 1977 a real GNP per employee gain of 1.8 per cent per annum, a real per capita GNP gain of 3.1 per cent per annum, and a real labour income gain of 3.9 per cent per annum. All of these measures illustrate how improvements in the real standard of living and economic growth are part and parcel of the same process.

3. If one assumes that a constant purchasing power pension benefit of $2,500 began in 1966, but no increment in the benefit was provided for productivity gains recorded between 1966 and 1977, then the

effective income claim of that benefit would have declined relative to the real income claims made by wage earners. That is, the distribution of income tilts against the fixed (real) income pensioner because the pension payment does not include some part of the productivity dividend. A $2,500 real benefit in 1966, which was valued at 66 per cent of average real per capita income, would experience an effective decline to 47 per cent of average real per capita income by 1977. A similar contraction in the relative income position occurs if other standards are used, such as real labour income per worker.

4. If pension benefits are not indexed for inflation, then the relative purchasing power erosion of the nominal dollar benefit is even greater. Between 1966 and 1977, for example, the GNP deflator (a broad index of inflation) more than doubled, causing the purchasing power of $2,500 in 1966 to decline to $1,458 by 1977 using 1971 prices. This effect reduces the relative position of the pension benefit to 28 per cent of average real per capita income in 1977 and 20 per cent of average real labour income per worker.

5. A comprehensive benefit index would protect the pensioner not only against inflation losses but would also reward the pensioner for the productivity dividend which other members of society gain. As noted earlier, the proper escalating index would be average movements in money wages rather than inflation. On average, money wages increase at about two percentage points faster than prices, which provide for real wage gains and standard of living improvements.

We chose to highlight the productivity dividend because we feel it is not often recognized as part of the indexing issue. It is a subject of some debate whether a retired employee who earns the productivity dividend during working years should have access to that dividend upon retirement. One could argue, however, that this issue could be a subject for collective bargaining negotiations; or at the individual decision-making tier, could be adjusted for by a higher savings rate.

One writer, Geoffrey Calvert, has used the empirical observations that pensioners' economic needs are lower to argue that the pensioners' benefits should not be fully indexed. The assertion concerning indexing is drawn from a twisting of empirical evidence, which moreover, has little bearing on the indexing issue. Parenthetically, even if Calvert were right that pensioners require less income in real terms because they require fewer amenities in life, it should have no relevance to the issue why a wage-earner's claims against society should take precedence over inflation protection compared with a pensioner's claim.(14)

As well, Calvert supports his argument for the declining real expenditures (or needs) associated with age on their spending on clothing, footwear, insurance, and taxes. But as Pesando and Rea correctly note: (15)

"The apparent decline in certain consumption expenditures of the aged in a sample simply reflects, in all probability, the decline in the incomes of the aged. Further, if one were willing to accept the argument that the real incomes of the aged should be allowed to fall, there is no reason to let the decline be determined arbitrarily by the rate of inflation." (Page 5)

Indeed a pensioner who is fortunate to live long and have his pension indexed for inflation, will find that "unnecessary luxuries" fall beyond his reach because he is not indexed for productivity gains.

In conclusion, it is difficult to argue against the view that the pension income should be protected against inflation, especially in view of the relative position of the pensioner in Canada's income stream. As we noted earlier, a fully inflation-indexed private plan does nothing more than maintain a constant "real claim" in terms of goods and services consumption.

c) Existing Income Distribution in Canada

The importance of indexing of pension benefits stands out even more dramatically when one considers the relationship between the incidence of low income and the age of the head of the households, or of unattached individuals. According to Statistics Canada (Income Distributions by Size in Canada, 1977, Cat. 13-206), Canadians had an average family income level of $19,530 in 1977, while the average income level of unattached individuals was $9,588. Households headed by individuals 65 years of age or over, however, tended to have incomes well below the national average in 1977.

Indeed, in 1977, elderly families headed by individuals 65 years of age or over received 52.4 per cent of the national income average, while the ratio for similar unattached individuals was 53.7 per cent of the national average. In 1977, the average annual industrial wage was $12,500. The families which were headed by males 65 and over received substantially less than this amount in 1977. Thus, 7.6 per cent of such families received a total income amounting to 25 per cent or less of the average national industrial wage, while 37.1 per cent of such families recived 50 per cent or less of the average national industrial wage. Among those families headed by females 65 and over, the corresponding percentages were 27.1 and 72 per cent for 1977. For unattached males 65 and over, 24.3 per cent of these individuals received an income equal to 25 per cent or less of the national average industrial wage, while 66.1 per cent of such individuals received an income equal to 50 per cent or less of the national average industrial wage. Among unattached females 65 years of age or more, the respective proportions were 50.6 and 87.2 per cent.

The figures in Table 17 highlight the Statistics Canada classification of low income cut-off levels for families and unattached individ-

uals in 1977. These figures classify a low income recipient as an unattached individual earning less than $4,446 and living in an urban area with a population of one-half million or more. Similarly, a two-person family which received less than $6,443 in 1977, residing in a large urban area, was also considered to fall below the low income cut-off point. The low income level cut-offs increase with size of family and the size of urban area, reflecting the higher cost of larger families and the higher cost of living associated with larger urban centres.

Using these low income cut-off classifications, as well as data on the demographic and geographic composition of families, Statistics Canada was able to identify the 1977 incidence of low income among families and unattached individuals by age of the head. Among families, with the exception of those headed by individuals 24 years of age or less, the highest incidence of low income (or poverty) was in families headed by someone 65 years of age and over. Indeed, in 1977, 22.3 per cent of families headed by individuals 70 years of age or over received incomes below the low income cut-off point.

Between 1973 and 1977, the incidence of low income tended to decline for all demographic groups, except those headed by individuals 24 years of age and less. Among individuals, the incidence of low income was highest for those above the age of 65, with over 63 per cent of individuals 70 years of age or more identified as falling below the low income cut-off point. Individuals also have witnessed some reduction in the general incidence of low incomes, although the reduction for the aged has not been as dramatic for individuals as it has been for families in Canada.

Despite some recent reduction in the incidence of low income for the aged, they still tend to be over-concentrated at the bottom end of the income ladder. Additionally, the incidence of low income is still extremely high. Hence, if private employment pension benefits are not indexed for inflation, the relative position of the aged could deteriorate further. It is recognized that continued indexing of OAS, CPP, GIS might prevent over time a further erosion in the relative position of many of the aged.

Many pension recipients receive a significant proportion of their retirement income from Old Age Security and Guaranteed Income Supplement payments, and to a lesser extent, payments from the Canada or Quebec Pension Plans. These pension benefits are indexed to inflation, and thus provide some real income protection. Perhaps for this reason the incidence of low income among the aged has declined between 1973 and 1977, though their relative income position has deteriorated since 1973.

The data in Table 19 indicate that the average income of families and unattached individuals increased most slowly for those families headed by an individual 65 and over, and for individuals 65 years of age and over. For such male-head families, average incomes rose by 48.8 per

cent, just slightly ahead of the 42.7 per cent cumulative increase in consumer prices. For males 65 and over who were not part of a family unit, their average incomes rose in line with the increase in the rate of inflation, while individual females 65 and over experienced an increase in average incomes well in excess of the average rate of inflation.

Thus, with the exception of families headed by females 65 and over, the aged were able to at least keep up with the rate of inflation, although they were not able, with the exception of single females 65 and over, to keep up with average income gains of other groups, nor with the increase in average weekly industrial wages and salaries, which rose 55.8 per cent between 1973 and 1977.

These data focus on the real income maintenance role played by the indexing of OAS, GIS, and CPP benefits. The data also demonstrate how the inability of the retired to share in the productivity gains does tend to result over time in a relative decline of the income position of the aged. Both of these facts reinforce the argument supporting pension indexing and, as well, they raise the question of allowing some productivity indexation as well.

d) Government Activity and Income Distribution

One important element in this discussion is the potential impact of these indexing schemes on the federal government budget since many of the schemes involve federal government revenues or expenditures in a direct way. The government sector interacts with the economy in a direct fashion by raising revenues and spending funds. These direct effects set up an indirect chain of events which points to the ultimate incidence of government activities.

(i) The Direct Effect of the Federal Government

The direct impact of the federal government on private activity can be traced via statistics on their revenues and expenditures.

The data presented in Table 20 illustrate the revenue and expenditure patterns in 1977. These national accounts data on the federal government revenues and expenditures include pensions paid to government employees and social security receipts and payments. Of the $35.9 billion in total revenues received by the Government of Canada in the last fiscal year (1977-1978), personal taxes made up $17.2 billion, corporate taxes $5.3 billion, indirect taxes $9.1 billion. Ottawa also earned investment income on assets in the CMHC (the Central Mortgage and Housing Corporation), the Bank of Canada, the Farm Credit Corporation, etc. Tax revenues accounted for about 89 per cent of the bulk of the total revenues.

Federal government expenditures totalled $45.3 billion in the 1977-1978 fiscal year. Of those expenditures, the funds spent on current goods and services ($11.3 billion) and gross capital formation ($1.2 billion) represented real acquisitions on the economic resource base. All of the other federal government expenditures, in one way or another, represented direct transfers of funds ultimately to individuals. For example, the transfer payments to persons include family and youth allowances, veteran pensions, employee pensions, unemployment insurance benefits, and old age security payments.

Transfer payments to other governments involve such programs as medicare, regional economic expansion, post-secondary education grants, hospital insurance payments, etc. Interest on public debt, subsidies, and capital assistance represent transfer payments of a sort.

Viewed as a large intermediary, then, the manner in which the federal government raises tax and non-tax revenues, and the areas in which these funds are spent directly (that is, those individuals who receive the benefits of these expenditures), imply that there is an incidence effect of the existence of government on private incomes available for expenditure.

It is worthwhile to consider what economists view as the incidence of the government sector in order to consider later on who potentially benefits from any federal subsidies towards indexation of private pension benefits. Unfortunately, there is no clear-cut answer to the question of who benefits and gains from the public sector, especially when the question is framed in the context of the pensioner, the worker, the employee, or the firm. On the revenue side there is a problem since there is a difference between the original base at which the tax is levied, and those who ultimately bear the tax. That is, there is some shifting of the burden of taxation among the various participants in the economy when taxes are levied. Thus, it is the final resting place or incidence of the tax which is of importance. A similar observation can be made vis-à-vis the expenditure side.

We are really interested in identifying those individuals who directly gain because of government purchases of goods and services, or because of the transfer payments which are made. Obviously, identifying the direct beneficiaries of federal spending is also a difficult task.

Table 21, taken from a book by Pope and McConnell, indicates the fact that there is no unanimity among economists in identifying theoretically the final resting places of major taxes. The greatest disagreement concerns the corporation income tax, since under the assumption of perfect competition and profit maximization, a firm would have no reason to change its price or production behaviour because of the existence of the corporation income tax. In this scenario, the corporation income tax would be borne completely by the firm's stockholders.

Another point of view is that the tax is borne completely, or in part, by the consumer - as firms may possess some market power which permits a shifting of the tax. Sales or excise taxes are assumed to fall primarily on the consumer of the purchased item, while the personal income tax is assumed to fall on individual income.

There is one further element in the tax incidence question. A tax device is usually described as progressive, proportional, or regressive, depending upon what happens to the marginal income tax rate as the level of income rises. A progressive tax has a rising marginal tax rate with higher incomes, while a regressive tax, on the contrary, indicates a declining marginal tax rate.

Since the personal income tax has a defined progressive rate structure, taxes on income generally are assumed to be progressive. Since the corporation income tax may fall on the higher income owners of capital, some assume that the corporation tax makes the total tax system more progressive. Alternatively, sales taxes and excise taxes, which are likely shifted to the consumer, are usually regarded as regressive in terms of who pays the taxes.

In a similar fashion, transfer payments by governments to specific income groups can be described as having either a progressive, neutral, or regressive income effect. As the Fraser Institute points out, transfer payments can be thought of as negative taxes - and in the main they tend to be regarded as highly progressive.

In 1964, the Royal Commission on Taxation published a study undertaken by Irwin Gillespie on the incidence of federal taxes and public expenditures in 1961. On the expenditure side, he noted that the fiscal system was clearly favourable to lower income earners.

> "As we move up the income scale, expenditure incidence becomes relatively less favourable; and beyond an income of $10,000 (in 1961), the incidence pattern seems to be almost proportional." (Page 153)

On the tax revenue end, he noted that,

> "The distribution of effective tax rates is regressive up to an income level of <u>at least</u> $3,000 and <u>at most</u> $5,000, and progressive beyond....In total, one-third of all families are affected by the regressiveness up to $3,000, while almost two-thirds are affected by the regressiveness if it persists up to an income level of $5,000." (Page 67)

The net fiscal incidence combines the revenue and expenditure effects of the total government sector on family incomes. The net fiscal incidence is the difference between expenditures received and taxes paid by income class. According to this study, in 1961, the existence of the federal government clearly resulted in positive income distribution from

the higher income classes to the lower income classes, with most of the progressivity resulting from the spending front. (See Table 22.)

The Fraser Institute undertook a smaller scale study in 1976 which provided similar conclusions. The Fraser study was carried out with 1975 data, and included the fiscal effects of all levels of government. That study essentially bears out the point raised much earlier by Gillespie. The income tax seems mildly progressive, and other taxes somewhat regressive against income, so that the total government tax system remains almost proportional to income. Progressivism of government occurs primarily via transfer payments, which are steeply progressive. No attempt was made in the Fraser Institute study to distribute non-transfer government expenditures.

That is, since lower income families receive the bulk of the transfer payments from government, their effective net taxes (here defined by subtracting transfer payments from taxes paid) are low. Indeed, for families with $2,500 cash income levels in 1975, their net tax rate was negative (-27.5 per cent).

When taxes and transfer payments were included, the Fraser Institute study noted that the low family income third of the population received 1.9 per cent in a net transfer, while the middle income third paid 27.9 per cent of income, and the high income third paid 74 per cent of their income. (Page 63)

Table 15
The Productivity Dividend and the Relative Value of Pension Benefits, 1966-1977, 1971 Constant Prices

	Average real per capita income	Average real labour income per employee	Average real output per employee	Assumed real pension benefit	Assumed real pension benefits	Selected ratios					
						Real pension benefits-$2,500			Nominal pension benefits-$2,500		
	(1)	(2)	(3)	(4)	(5)	(6)=(4)/(1)	(7)=(4)/(2)	(8)=(4)/(3)	(9)=(5)/(1)	(10)=(5)/(2)	(11)=(5)/(3)
			(Dollars)								
1966	3,769	4,714	10,335	2,500	2,500	.66	.53	.24	.66	.53	.24
1977	5,287	7,180	12,565	2,500	1,458	.47	.35	.19	.28	.20	.12
			(Per cent)								
Annual rate of change 1966-1977	3.1	3.8	1.8	.0	-4.8						

Note The implicit price deflator was used to adjust the nominal labour income figures in column 1 and the nominal pension benefits in column 5.

Source Bank of Canada Review, August, 1978.

Table 16
Indexing Options - Current Prices

	Nominal annual benefit	Indexed only for purchasing power loss	Indexed only for direct productivity dividend	Indexed only for real per capita income gains	Indexed only for real labour income/ employee gains	Combined index for inflation and growth dividend		
						Utilizing direct productivity variable	Utilizing standard of living variable	Utilizing labour income variable
				(Dollars)				
1966	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
1977	2,500	5,190	3,039	3,507	3,807	5,729	6,197	6,497
				(Per cent)				
Annual rate of change 1966-1977		6.9	1.8	3.1	3.9	7.8	8.6	8.1

Table 17
Low Income Cut-Offs of Family Units, 1977

Size of family unit	Size of area of residence			
	500,000 +	100,000-499,999	30,000-99,999	Rural
1 person	4,446	4,161	4,041	3,231
2 persons	6,443	6,034	5,859	4,688
3 persons	8,221	7,700	7,473	5,980
4 persons	9,778	9,156	8,888	7,110
5 persons	10,930	10,233	9,936	7,951
6 persons	11,999	11,235	10,909	8,726
7 persons	13,158	12,316	11,960	9,567

Source Statistics Canada, Income Distributions by Size in Canada, 1977, Cat. 13-206.

Table 18
Incidence of Low Income Among Families and Unattached Individuals by Age of Head, 1973 and 1977
(Estimates based on Revised Low Income Cut-offs)

		1973	1977
		(Per cent)	
Families			
Age of head:	24 or under	15.4	17.1
	25 - 34	12.2	11.4
	35 - 44	13.4	10.1
	45 - 54	10.3	9.1
	55 - 64	13.5	10.2
	65 - 69	22.7	16.3
	70 or over	27.4	22.3
Individuals			
Age:	24 or under	38.4	36.8
	25 - 34	16.6	14.8
	35 - 44	18.2	22.6
	45 - 54	32.4	32.2
	55 - 64	42.6	45.3
	65 - 69	53.8	50.3
	70 or over	69.5	63.2

Source Statistics Canada, Income Distributions by Size in Canada, Preliminary Estimates, 1973 and 1977, Cat. 13-206.

Table 19
Percentage Increase 1973 - 1977 of Average Income of Families and Unattached Individuals by Age and Sex

		1973	1977
		(Per cent)	
Families			
Age of head:	24 or under	58.9	60.6
	25 - 34	56.1	61.8
	35 - 44	61.3	61.4
	45 - 54	62.9	53.7
	55 - 64	61.9	53.3
	65 or over	48.8	35.5
Individuals			
Age:	24 or under	64.0	67.9
	25 - 34	49.4	62.7
	35 - 44	52.0	62.3
	45 - 54	53.4	56.8
	55 - 64	51.4	58.4
	65 or over	42.7	57.1

Source Statistics Canada, Income Distributions by Size in Canada, Preliminary Estimates, 1973 and 1977, Cat. 13-206.

Table 20
Government of Canada Revenues and Expenditures, National Accounts Basis, (a) 1977-1978

	1977-1978 Actual
	(Millions of Dollars)
Revenues	
Direct taxes, persons	17,245
Direct taxes, corporations	5,229
Direct taxes, non-residents	544
Indirect taxes	9,153
Other current transfers from persons	14
Investment income	3,163
Capital consumption allowances	592
Total revenues	35,940
Expenditures	
Current goods and services	11,317
Transfer payments to persons	13,515
Subsidies	2,501
Capital assistance	382
Current transfers to non-residents	700
Interest on the public debt	5,472
Transfers to provinces	9,741
Transfers to local governments	390
Gross capital formation	1,253
Total expenditures	45,271
Surplus or deficit (-)	-9,331

a Government pensions social security receipts and expenditures are included in the national accounts version of federal revenues and expenditures. In the public accounts, such funds are treated as non-budgetary transactions.

Source Budget Speech, November 16, 1978.

Table 21
Probable Incidence of Taxes

Personal income tax	The household or individual upon which it is levied.
Corporation income tax	Disagreement. Some economists feel the firm on which it is levied bears the incidence; others conclude the tax is shifted, wholly or in part, to consumers.
Federal sales and excise taxes	With exceptions, consumers who buy the taxed products.
Provincial sales taxes	Consumers who buy the taxed products.
Property taxes	Owners in the case of land and owner-occupied residence; tenants in the case of rented property; consumers in the case of business property.

Source C.R. McConnell and W.H. Pope, Economics: McGraw-Hill Ryerson Limited, p. 157.

Table 22
Effective Net Fiscal Incidence, 1961(a)

Family income class	Federal level	Provincial and municipal level	Total all levels
(Dollars)		(Per cent)(b)	
Under 2,000	72.0	30.9	102.8
2,000 - 2,999	24.6	15.3	39.9
3,000 - 3,999	9.0	10.1	19.1
4,000 - 4,999	4.9	7.4	12.3
5,000 - 6,999	.8	5.1	5.9
7,000 - 9,999	-1.8	1.8	.0
10,000 and over	-6.0	-3.2	-9.2
Total	4.0	5.1	9.1

a For the Standard Case. Details may not add to totals due to rounding.

b The difference between expenditures received and taxes paid, by income class, is expressed as a percentage of the distribution of "broad income."

Source W.I. Gillespie, "The Incidence of Taxes and Public Expenditures in the Canadian Economy." Study No. 2, Royal Commission on Taxation (September 1964), p. 180.

Table 23
Fixed Income Yields, Inflation, and Indexing Costs of Fixed Income Securities

	Expected inflation= actual inflation	Market bond prices	Fixed coupon	Market yield	Percentage point change in inflation rate	Expected nominal payments at termination	Realized nominal payments	Real rates of return	Expected real payments (at inital prices)	Dollar cost of indexed purchasing power
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	(Per cent)		(Dollars		(Per cent)	(Dollars)		(Per cent)	(Dollars)	
Inflation acceleration										
Issue date	7.7	100.0	9.7	9.7	.0	109.70		2.0	102.00	
Maturity	10.0	100.0	9.7	12.0	+2.3		109.70	-2.3	99.70	
Indexed market yields		100.0	12.0	12.0			112.00	2.0	102.00	2.30
Inflation deceleration										
Issue data	7.7	100.0	9.7	9.7	.0	109.7		2.0	102.00	
Maturity	5.4	100.0	9.7	7.4	-2.3		109.70	4.3	104.30	
Indexed market yields		100.0	7.4	7.4			107.40	2.0	102.00	-2.30

5. KEY PRINCIPLES FOR ASSESSING THE VARIOUS INDEXING PROPOSALS

Since a point of departure is usually necessary for analytical purposes, we employ the economist's stylized, perfectly competitive world of individual decision-makers and consumer sovereignty. In a world of perfect markets and long-term saving and spending time horizons, the life-cycle model would suggest that (based on private preferences and lifetime budget/work income constraints) each individual would determine the nature of his retirement package and the levels of voluntary contribution rates during the prospective working years. That is, the replacement ratio (the desired ratio of retirement income to work income) would vary among individuals.

In this stylized world, there are no collective negotiations, no vesting problems, and no indexing problems since in effect all decisions are real decisions. As for the savings to earnings ratios (or the contribution rates) for those workers with a long planning horizon, their contributions would tend to be low during early working years, but rise with age towards a peak somewhat close to retirement.(16)

In such an environment, private institutions may arise to specialize in the provision of scale economies in the pooling and investing of funds. Such economies, in effect, would reduce the average transaction costs of investing. Moreover, one could conceive also of a demand for a government pension initiative if it was felt that the public at large required a minimum level of savings for retirement. Such demands would arise from fears that some short-sighted individuals would not provide for an adequate retirement income or, in some cases, that some persons would underestimate their own life expectancy. Moreover, the enforcement of the contracts entered into between individuals and institutions would require a legal framework, and once again, a pension-savings related role for government would appear.

To extend the above stationary equilibrium model one step further, one can allow for non-uniform rates of inflation over time and for a diversity of risks among the various financial instruments. With greater variability in inflation, there will be greater uncertainty - which has a social cost - and periodic adjustments in inflation expectations and savings and spending allocations would occur. If there were, for example, a permanent increase in the rate of inflation, employed individuals would make the appropriate adjustment in their savings to prevent a decline in their real retirement income. In this world, the inflation jump would be mirrored in nominal returns and the price of financial assets. As long as the individual had a "real" contractual pension commitment and the assets were denominated in real terms, then the inflation change would present few problems for the retired pensioner.

If there were lags in the adjustment process, then an increase in the rate of inflation that persisted over time could generate a decline in the real value of accumulated financial assets. In this case, em-

ployed workers would have to increase their contribution rates to adjust for this loss, but retired individuals could not make an appropriate adjustment. The higher rate of inflation in this environment would be a result of government policy, and some would argue that the government should take the responsibility of maintaining the real value of the pension benefits of retired individuals. If such government actions resulted in higher taxes, it would be possible that employees would change their savings contribution rates.

Within this system, individuals free to select the institution to manage their pension savings in an environment of risk diversity and inflation uncertainty, would be willing to allocate their savings to that security which best matched their preferences for risk and expected returns. Such actions would ensure active competition among the institutions for savings, and in turn would minimize poor management.

In summary, in this somewhat stylized world, we would expect:

1. Some variation in contribution rates in response to the age of the individual;

2. Some variation in the contribution rates in order to compensate for lags resulting from unexpected changes in inflation;

What we actually do observe in the real world is that retirement savings are a result of three tiers of decisions - individual decision-making, collective decision-making (employee-employer negotiated pensions or unilateral employer decision-making) and government decision-making. Individual decision-making is now regarded as supplementary to the two other tiers. That is, if an individual has a publicly available pension (CPP/QPP, OAS), and at the same time a private employment pension, he may base his incremental discretionary savings decision on the adequacy of these two combined sources of retirement income.

Of course, there is uncertainty as to the real value of the first two tiers of retirement savings, and hence one would expect that sudden changes in the inflation rate would have the greatest impact on the third tier of savings, the individual level. The data in Table 1 support this supposition. Obviously, such savings adjustments can occur only for individuals who have adequate levels of income.

Since some individuals do not have a sufficient income flow to enable them to adjust their savings pattern in response to unexpected or unanticipated changes in inflation, then part of the adjustment could also take place at the government tier. Indeed, even in our stylized model set out above, part of the adjustment would occur in the pensions provided by government, most likely under a pay-as-you-go funding arrangement. Since we have postulated that we would expect the bulk of the pension savings adjustments to be made by individuals and to a

lesser extent by government, several questions then arise with regard to employer-sponsored pension plans. The three most critical are:

1. Why did such plans arise since there did not appear to be any explicit need for them?

2. Why doesn't the collective agreement process handle the entire matter of indexing of post-retirement pensions?

3. Who in effect would pay the cost of this indexing if it could be negotiated through the collective agreement process?

Economists argue that if there is an activity, then there must be a demand for the services or goods being provided and as well, there must be an individual or group willing to supply the services or goods. In the case of employer-sponsored pension plans, economists have traditionally argued that there are benefits to both employers and employees for setting up and negotiating such plans. In attempting to apply this proposition to employer-sponsored plans, we were able to detect advantages only for employers. Even in this case the value of these advantages to employers is not likely to be easily measurable.

Employer contributions to a pension fund are appropriately identified as part of the employee compensation bill. Thus, the employer can defer to some extent, given the regulations of the Pensions Benefit Act, part of the company's total labour bill. This deferment may prove to be nothing more than illusionary over a period of time, but at the same time could be significant over a shorter period of accelerating rates of inflation and an increase in the longer term underlying rate of inflation. That is, during the period of the early to mid-1970s when the prevailing rate of inflation appears to have increased, the ability to defer part of the labour cost to some later period may have provided rather important increments to a company's cash flow and enabled some companies to adjust to the accelerating rates of inflation and more unstable general market conditions.

A second advantage which may be conceptually a more permanent and real advantage for employers is that the delayed vesting arrangements might reduce labour turnover for a firm. A lower degree of labour turnover would ensure that a firm would be able to earn an adequate income from the training and investment in the work-force. Pesando and Rea (1976) (page 14) have noted another implication of delayed vesting on the wage-setting process. Delayed vesting, according to Pesando and Rea, can serve as a substitute for wage scales that would have to rise steeply with seniority and skill levels. Alternatively, delayed vesting could be considered as a type of insurance which the firm issues so as to share the cost of the specific manpower training undertaken with the workers. Obviously, these various propositions depend upon workers recognizing the vesting provisions in pension plans and employers not taking advantage of these vesting provisions and firing workers before

their rights in the pension fund are vested. Indeed, there is likely to be a high degree of ignorance on the part of workers with regard to their vesting rights and the advantage of delayed vesting may be more apparent than real in the actual market-place.

While we are able to establish some possible benefits for employers, we found it more difficult to identify advantages to employees from such schemes.

One may suggest that workers might perceive that their lifetime income is generally higher because of the deferment of part of their wage until they retire. Otherwise, the worker should prefer a higher current wage and the ability to manage his own savings rather than run the risk of not receiving full vesting rights and be locked into a scheme that may have its funds poorly managed in relative terms.

Our inability to conceptualize any net positive advantage for the employee provided us with some insights into why contribution rate adjustments to unexpected inflation movements have not generally occurred at the collective decision-making tier. Obviously, it is conceptually possible for employers and employees to negotiate for indexed retirement benefits and to make periodic adjustments in contribution rates.

While employers argue they cannot afford these costs, we would point out in turn that the current wage bill could be reduced if the deferred wage component were to increase. But from the point of view of the employee, a higher contribution rate and a lower wage increase would lower real take-home pay during an inflation wave. Moreover, there is a general uncertainty as to the value of deferred wages or indeed even the likelihood of ever seeing the income at retirement.

It is understandable that labour organizations would avoid such negotiations and would tend to push the problems of the retired workers back onto the employers. Moreover, young employees would have even stronger objections to negotiating indexed pensions in this way because they would have no guarantee of obtaining vesting rights. At their stage in the life cycle, current income is more desirable than deferred income.

Thus, while private employers claim that they cannot duplicate the indexing provisions of public sector plans because they would have to incur higher costs, we in turn suggest that the uncertainty of indexing costs could be borne effectively by both employees and employers. Indeed, at present, savings adjustments occur at the individual level via other forms of savings, which are more discretionary. Of course, the individuals we are talking about tend to represent the higher income earners in our society.

Further, in light of the data presented in Table 4, it is apparent that only high wage firms have effectively involved themselves in pri-

vate pension schemes, since firms paying wages at slightly above the minimum wage do not have a realistic opportunity for deferring part of that compensation into the future. For low wage workers, any possible adjustments occur via their own individual efforts or with help from the government.

In the preceding discussion it was argued that at the collective decision-making tier indexing of pensions during the retirement years could be negotiated and would to a large extent be paid for by employees in the form of lower wage gains at the present time. There would also be some cost borne by the employers for their additional contributions. However, the share of the total cost would be lower for employers than employees since employers' contributions comprise part of the deferred wage package that employees are getting and that are being traded off against current income. Nevertheless, while negotiating indexed pensions is possible, such negotiations have rarely taken place. Part of the reason for this is that most employer-sponsored pensions were initiated unilaterally by employers and have continued to be exempt from the collective bargaining process. Indeed, the setting up of pensions by employers was considered to be part of a social contract that they entered into when hiring a worker. As members of the Commission have pointed out to us, the pension was considered an additional benefit to be paid to employees since firms viewed their responsibility to their workers not terminating with the workers' retirement but in fact persisting beyond that time. Since employer-sponsored pensions are exempt from the collective bargaining process, the bulk of the adjustment has fallen on employers.

In the cases where pensions have continued to be separate or independent of the bargaining process, employees are not likely to view the pension benefits as deferred wages and hence are not likely to consider trading off current wage increases against improvements in future benefits. Firms that have unilaterally improved pension benefits by indexing on an ad hoc basis the pensions received by retired employees, or by periodically adjusting the existing structure of pensions for current employees are not likely to have been able to compensate for these higher costs by saving in terms of lower current wage increases granted to their employees. For this reason, then, employers have found it increasingly difficult to adopt indexing of pensions on a larger scale. Compounding the difficulty has been the problem faced by pension fund managers in earning adequate real rates of return (in line with underlying interest and wage assumptions built into the pension plan) during periods of accelerating rates of inflation. Hence unless pension plans that were unilaterally established by employers do become part of the collective bargaining agreement, it is highly unlikely that changes in the structure of plans will be brought about by employers to permit the indexing of benefits upon retirement.

Some may argue, however, that firms, particularly the larger firms, possess a sufficient degree of market power to pass on the additional

cost of indexing in the form of higher prices. In effect, we are raising the entire question of who would pay for indexing of pensions in the middle tier, the employer-sponsored plans. Some reference to public finance literature on the incidence of the corporate tax is appropriate at this stage. However, as we pointed out in Section (d), the literature has not reached any strong conclusion with regard to the incidence of the corporate tax. Those supporting the perfectly competitive model have argued that the bulk, if not all of the tax has fallen upon shareholders and depressed the private rate of return. Others who pursue the market power argument suggest that most of it is passed on in the form of higher prices. In Table 21 in the preceding section, this ambiguity is highlighted.

Our position is that indexing of private post-retirement incomes should be paid for entirely by employees since they are the ones who would gain from this benefit. However, in the real world where pensions are either part of the collective bargaining agreement or are unilaterally administered by employers, employees would not bear the entire cost of indexing. Part of the cost would be borne by shareholders of companies and by consumers and suppliers for these companies. Since most of the private plans are in the high wage sector of the economy, from an equity point of view government indexation of retirement benefits at the second tier would tend to result in a redistribution of income in general from low income individuals to middle and higher income individuals.

In concluding this section, we would like to reiterate that in a world consisting of only two levels - the government decision-making tier and the individual decision-making tier - the adjustment of the pension savings decisions to unexpected-unanticipated inflation changes would be made by and large by individuals, and to a lesser extent by government. As government is involved, a redistribution of income in the direction of lower income individuals could occur. At the individual level one would expect changes in the contribution rates over time if inflation per se were perceived to be unstable. Obviously, the savings adjustments by individuals would only occur among those who were still employed. The retired would have to rely solely on the government for any adjustments to unexpected and unanticipated inflation moves. Finally, the savings adjustments that would be made would be much greater, both in terms of number and absolute value, if the rate of inflation permanently increased.

6. CRITICAL ASSESSMENT OF ALTERNATIVE PROPOSALS FOR INDEXING POST-RETIREMENT BENEFITS

a) Introduction

In essence this section of this study is intended to represent a culmination of much of the previous work. If mandatory or non-mandatory

indexing of private pension benefits is to be recommended, which mechanism, or mix of proposals, seems to be the most appropriate? A review of a series of proposals implies that certain minimum yardsticks for evaluation be considered. Among these yardsticks are the following:

1. expected effect on the present distribution of income;

2. expected financing impacts on private plans - i.e., the actuarial soundness test;

3. the involvement test - what does the scheme do in terms of the prospective impact on negotiated compensation packages?

Let us consider these three major criteria. With regard to income distribution, it has already been noted that it is very difficult to state who will be the winners and losers from the introduction of a scheme. To place that question in perspective, if the scheme which is being considered requires federal government financial payments, it is necessary to ask whether the prospective increases in federal government budget deficits will be financed by tax hikes or government expenditure reductions, etc. Moreover, it is important to ponder what the prospective effect will be on the individual pensioners, the workers, and of course the employers.

Under the second actuarial criterion, as an example, we simply note that the introduction of a new indexing plan may be regarded as actuarially sound or not, may have the effect of reducing the extent of experience deficiencies, or not.

The last criterion follows from an argument that without impediments one would expect the collective bargaining system to be a proper vehicle for the introduction of such plans. By this test we essentially inquire whether the pension question will be handled in a more fruitful way by the collective bargaining system.

Once again, it is necessary to state that ultimately the most important consideration may be income distribution. Identifying winners and losers in this way may nearly be impossible.

The various post-retirement indexing proposals for private pension plans which are briefly reviewed here are listed below. It should be noted that in some cases the options are not that different from each other. That is, a partial mandatory indexation by employers, or indexation with a cap, differs only in degree from full mandatory indexation.

1. The index bond solution.

2. The government as an insurer of last resort.

3. Excess interest scheme.

4. Continual ad hoc indexation adjustments.

5. The collective bargaining fulcrum.

6. The inflation tax credit.

7. Cofirentes +; Martin O'Connell proposals.

8. Keith Cooper - partial indexation plan.

b) Professor Pesando's Schemes

According to James E. Pesando the nature of the solution to the indexing problem is obvious. While private industry may feel it is unable to accept the actuarial risk of providing a real rate of return instrument,(17) (Pesando and many other economists have already noted that it is surprising that the private sector itself has not come out with real rate of return instruments) the government has a legitimate interest in accepting this form of actuarial risk in order to protect retirement incomes from the ravages of inflation. In a provocative paper entitled "The Indexing of Private Pensions: An Economist's Perspective on the Current Debate," Pesando discusses two potential solutions. In one the national government would issue a purchasing power bond to private pension plans. In the other, the government would offer an insurance scheme to private pension plans so that they would be in a position to offer "a real income" pension benefit to the retired workers.(18)

(i) The Index Bond Solution

In order for a pension plan to be able to offer a real rate of return benefit, it must itself have access to financial instruments that are automatically and fully adjusted for inflation without the lender experiencing any changes in the value of the asset. In this part of the report we touch on the option of the pension fund purchasing a real purchasing power bond issued by the Government of Canada. The manner in which a purchasing power bond could operate is described in Table 23.

As noted earlier, in an inflationary period as the rate of inflation accelerates, market rates of interest adjust and, of course, bond prices fall. Indeed, Pesando notes that the adjustment to changes in inflationary expectations in the bond market is fairly complete, as an expected one percentage point rise in the rate of inflation produces a one percentage point increase in interest rates. This is consistent with the Fisher principle. However, the adjustment ignores the decrease in prices of existing bonds with coupon rates below current yields.

In the accompanying table we use the following figures to provide an example of how this mechanism would work. We assume that the adjustment between rates of inflation and changes in nominal yields is instantaneous. We assume that at the issue date nominal yields on a one year

bond are 9.7 per cent, the expected rate of inflation is equal to 7.7 per cent per annum, the actual rate experienced during the preceding year. The investor (lender) plans to hold the security for one calendar year. During the year there has been a change in the inflationary environment with both the expected and actual rates of inflation having increased by 2.3 percentage points and market yields rising proportionately to 12 per cent. The bond owner thus experiences a real loss of $2.30 from his original expectations. That is, for full indexing to be in operation, the realized nominal payments at maturity must be $112 rather than the $109.90. Thus indexing via automatic increases in the fixed coupon to compensate for the extra rate of inflation would cost the issuer of the bond $2.30 in this example.

In a decelerating inflation period nominal yields decline and, of course, real gains in excess of 2 per cent are earned on the fixed price security. In other words, a purchasing power bond is like a Canada Savings Bond with a floating coupon rate.(19)

Thus, purchasing power bonds have a symmetry when the rates of inflation accelerate or decelerate and when the adjustments to expected changes in prices are rapid. If such an instrument were available to private pension funds then, of course, they would be in a position to offer real denominated pension benefits.

Note in the example in Table 23 the assumption that the real rates of return earned on the purchasing power bonds would match the real rates of return which would be earned on comparable financial instruments. To reiterate this point, if there were an unanticipated shift in inflation, the government issuing the bond would not really undertake any additional costs in real terms. This type of index bond takes care of the unanticipated inflation changes, for at maturity the total nominal payment to the lender has the same purchasing power as the nominal funds originally loaned out, plus the real rate of interest.

But the introduction of indexed bonds results in changes which are much more profound than simply the differences cited in the above example. The issuer of the bond (borrower) in a sense accepts the entire risk of offsetting the inflation losses. Therefore, undoubtedly the issuer of the bond would desire or demand in the market-place to borrow at a real rate of return somewhat below the real return on non-indexed bonds. In effect, the difference in the initial real rates of return could be viewed as a premium being paid by lenders to insure against unexpected inflation changes. Since it is unlikely that the private sector will issue such securities, the index bond solution in essence means that Ottawa would have to issue these securities.

(ii) Analysis

If one digs deeper into the implications of the Government of Canada issuing indexed debt, the advantages become less clear-cut. It

is clear that there are unknown but potentially large capital market implications of such a scheme. In turn, these effects depend on whether the amount of such securities would be limited and who or what institution would have access to them. Among the possible capital market implications are:

1. Since the coupon rate on these bonds adjusts quickly to inflation movements, nominal yields on all fixed income securities might adjust more rapidly to inflation.

2. If it is deemed that only a limited quantity of such bonds is to be made available, how would a rationing system be devised? Why is it fair for private pension funds to have access to such securities, when such funds cover only about 40 per cent of the work-force? Real purchasing power bonds obviously will be an attractive savings instrument - should they also be made available to RRSP holders?

3. Private debt would be less acceptable to pension funds if purchasing power bonds were available from the federal government. In order to become more like a purchasing power bond, which after all is a very short-term instrument, private debt would tend to see its term structure shortened. This would make private financing more difficult and increase risks associated with cyclical fluctuations resulting from economic activity.

4. Would trading in these purchasing power bonds be permitted? Trading, per se, would tend to speed up the adjustments in the price and yields of other securities.

5. The larger the volume of such bonds in existence, the more the management of funds becomes automatic, not discretionary. This scheme could remove some of the incentive for good management of pension funds.

6. As well, what would happen if the federal government were operating its cash budget in a surplus position? While at the present time this might not appear realistic, it might not always be the case. In effect, then, the government would end up as a purchaser of last resort of private security debt and equity - and in fact - the government would be an extra intermediary between the pension industry and the private sector. One could visualize with such a scheme private investment funds holding only government bonds and the government portfolios owning the bulk of private equity. Indeed, Pesando has admitted this possibility.

In addition to the possible capital market effects there are two other shortcomings to the index bond proposal.

1. To return to an earlier point, even if indexed bonds were made available, the pension benefit terms would still have to be renego-

tiated if indexing were the goal. That is, although it might be somewhat easier to introduce indexed employer-sponsored pensions because of the existence of such bonds, the introduction of these bonds need not result automatically in indexing. Any shift from flat benefit to indexed benefit schemes would still require immediately higher contribution rates by both employees and employers until the current level of deficiencies was overcome. Indeed, indexing would be easier to achieve but the availability of index bonds alone provides little incentive to negotiate collectively or introduce unilaterally indexed post-retirement benefits.

2. The issuance of indexed bonds by Ottawa, which could possibly be a substitute for some of its own fixed income debt or Canada Savings Bonds, could have some income distribution effects. There are a number of possible outcomes on the income distribution front, depending on whether Ottawa's net borrowing rises, falls, or remains the same with the issuance of part of that debt in a fixed income form. In essence, in the past Ottawa could have been a net winner due to rising inflation as a result of its net borrowing position. This could alter.

   In a deteriorating inflation environment the private pension funds which would have access to the fixed income debt would be better off - and thus so would their interested parties, the firms and their employees, and at some point the pensioners. In an improving inflation environment this would not be the case - as indexed bonds would not offer the portfolios any capital gains.

   If one assumes, however, that inflation will tend to worsen, the high wage firms who contribute to pension funds, the employees of such firms, and their pensioners would gain some advantage over those without access to the purchasing power bonds. If these bonds were spread beyond the private pension fund sector, this would tend to reduce the relative advantage to those with access to them.

   In effect, the issuance of index bonds by the government might necessitate increased taxes or reduced levels of spending. Since the bonds would primarily benefit individuals involved in the second tier employer-sponsored pension plans, there could occur some redistribution of income from low to middle income recipients. Moreover, the availability of index bonds on a limited scale to pension funds, or even on a larger scale, would accomplish nothing in terms of resolving the indexing problems of individuals not covered by employer-sponsored plans; namely, low wage and part-time workers.

   Thus we are in general agreement with Pesando that the purchasing power bond solution itself might not be ideal.

(iii) Government as an Insurer of Last Resort

In Pesando's view, the federal government has no practical alternative but ultimately to get involved in underwriting the inflation risk for the pensioners. He notes that the CPP and OAS plans are both fully indexed and underwritten by the taxing powers of government. Thus, there are three critical points in his plan:

1. Sponsors of defined benefit plans must purchase a requisite annuity from an insurance company which yields a real rate of interest in order to provide a real benefit.

2. The federal government could underwrite the risk associated with unanticipated inflation, as long as any error made in the forecasting of this inflation would tend to equalize out to zero over some period of time. The life insurance company would have to pay the government a premium for this insurance service.

3. Tha annuity could be issued directly by the government or indirectly by private insurance companies or the firms themselves which in turn would have the government underwrite the risk.

While we doubt that purchasing power bonds are the ideal instrument for overcoming the inflation-induced losses to pension plans, we also have qualms over the insurance scheme approach. Our qualms are related to the practical limitations of the plan. It should be recalled that the essence of the scheme is that the government functions as an insurance agency for life insurance companies which in turn provide pension funds with annuities generating a real benefit level. In effect, the scheme is concerned only with retirement income and guaranteeing that the real return during the retirement years on the investment pool built up during the pre-retirement period would be adequate to provide for a fully indexed pension.

> "In particular, the federal government could sell insurance (for example) to life insurance companies which would enable them to sell fully indexed annuities. In effect, the government would underwrite the risks associated with the possibility that the subsequent rate of inflation would diverge from its expected path, or 7 per cent in the above example." (Pesando, page 16)

Under the insurance scheme the pace of future inflation would be calculated from the current nominal yield of long-term bonds. Thus if long-term government securities currently were yielding 10 per cent, and 3 per cent were the estimated long-term real rate of return to such securities, then 7 per cent presumably would be the expected long-term rate of inflation. If the inflation rate actually exceeded 7 per cent, then it would be necessary for the insurance fund to transfer funds to the insurance companies which issued the annuities to the pension fund.

As Pesando notes in his paper, the insurance fund would operate symmetrically, transferring funds to plans when inflation (and yields) were rising, receiving funds from plans when inflation (and yields) were moderating. For governments to net out neither a winner nor loser, the rate of inflation would have to have a meaningful average over some period of time; or stated in another way, as long as inflation forecasts were on average correct. If forecasts were on average correct, the funds would remain on average relatively stable in size, and in turn government's involvement would simply be mechanical rather than fiscal.

iv) Analysis

1. In the purchasing bond case only part of the portfolio would be affected by the scheme. Under the insurance scheme, that part of the portfolio which was transferred to the insurance company on which inflation gains (or losses) would be calculated would be affected. Thus the potential impact of the insurance fund scheme, if restricted to insurance companies only, is indeterminate without knowledge of such variables as the proportion of assets converted into annuities offered by the insurance companies and the demographic composition of the private sector work force.

2. A real risk in this scheme is the potential for the insurance fund to not calculate properly its own actuarial risk. There would be, indeed, the possibility of severe drains on the national treasury if inflation acceleration were the course for a long period of time. Or stated another way, if there were a permanent increase in the average level of inflation, this could cause significant problems, since the government would end up in a deficit position with regards to fulfilling its obligations.

3. Calculating the inflationary expectations figure from the yield curve is not as straightforward as economic principles suggest. No doubt the assumption of a fixed real rate of return would be adopted in such calculations, though of course, there is no reason why real rates of return to government securities should be fixed.

   To provide an example of where big transfers could occur from the fund to the insurance company, consider the following. In 1974 long-term government securities were yielding 8.87 per cent while the actual recorded rate of inflation was 10.9 per cent. If a fixed real yield was assumed to be 3 per cent, then the expected rate of inflation at that time for the time horizon into the future would have been 5.5 per cent. In fact, the rate of inflation in 1976 was easily double that expectation, and in 1977 was considerably in excess of the presumed 5.5 per cent rate. Granted this problem could be minimized over a long enough period of time, but the short-run implications could still be very severe.

4. An associated part of the above concern is that relative spreads between security yields alter, depending upon market conditions. These interest rate spread changes might be picked up in a calculation as a shift in the inflation expectation components of the yield structures.

5. The insurance scheme does not deal with the existing problem of experience deficiencies and unfunded liabilities. Unless the insurance scheme were extended to the total pension pool of assets, this problem would still exist, particularly during periods of rising inflation rates.

6. The insurance plan does not provide a direct incentive for negotiating or unilaterally introducing post-retirement indexing, albeit it does provide a vehicle for making indexing somewhat less risky. Employees might prefer to adjust to unexpected or unanticipated changes in the rate of inflation on their own rather than be compelled to do so through the medium of employer-sponsored plans.

7. Even if the rate of inflation did fluctuate over time around a single value rather than fluctuate but increase from one level to another, long-run inflation expectations would change from year to year in response to the annual movements in actual rates of inflation. Hence the guaranteed rate of escalation built into the annuities would fluctuate from year to year so that the administration of the insurance fund would become increasingly complex over time. Thus, a peculiar situation could arise in any given year with some life insurance companies paying into the fund and others receiving from it.

8. The prevailing rate of inflation during the retirement years would have to be correctly assumed in order to establish contribution rates that would generate an adequate fund to purchase the desired real value annuity. Moreover, the pension fund would have to earn the real rate of return implicit in the host of actuarial assumptions underlying the structure of the fund. The insurance scheme does nothing to deal with the problems that might arise at these stages.

9. It is hard to assess the relative winners or losers in terms of income distribution impacts. This scheme is designed, in principle, not to alter the federal government budget position. If that were the case, the pension fund participants, employers, employees, and pensioners could be in an improved relative position over the longer run, depending upon insurance premium rates, and how they were shared. If this scheme were in place and there were a high, unexpected increase in inflation, then the ultimate increase in the federal government budget could have an effect depending upon the financing of the fund transfers from the government via the insurance industry to the pensioners.

It should be recalled that if the transfers were financed by higher federal taxes, the cost would be borne in a very slightly progressive manner across income groups. If the transfers were financed by government expenditure reductions, then alternatively, the costs would be borne in a fairly regressive fashion across income groups. If the transfers were financed by a higher federal government deficit, that is, if the transfer funds were in turn borrowed in the market-place, then the incidence effects would be clouded extraordinarily.

c) The Excess Interest Proposal

In order to determine pension contributions, either for the employer alone or for employees and employers combined, it is necessary to create a fund that will be adequate to purchase the annuity promised to the employee. In this regard assumptions are made concerning price and wage inflation and the interest earnings appropriate to the investment vehicles of the plan. It is possible, as rates of inflation and nominal yields change over time, that the actual earnings of the plan may exceed the assumed earnings. Thus, it has been argued that when excess interest is earned, the excess earnings should be used to index to whatever degree possible the pensions of former employees who are currently retired and receiving pension benefits from the company. It should be pointed out that the extent of the indexing of existing pensions would be strictly a function of the level of excess earnings. There would be no guarantee from year to year that indexing would be continued and as well that there would be full indexing in any given year. To some extent this plan is an offshoot of the ad hoc indexing provisions already practised by many major employer-sponsored pension plans.

(i) Analysis

1. The short-term excess interest rates earned by a fund could be used to reduce the contributions by employers or employees to the fund or to improve the benefits to present employees rather than to index the pensions of past employees. Obviously, some combination of the three options could result, for if existing pensions were indexed, there would likely be demands by current employees to have their pension benefits improved as well. Alternatively, current employees could demand to have their current contributions reduced without any commensurate improvement in their pension benefits.

2. This scheme does little to deal with the problems that may be faced by low wage workers or low income pension recipients and it ignores entirely the possibility of setting up incentives for adjustments to inflation to be undertaken at the individual tier.

3. The excess interest earned may be inadequate for full indexing, particularly during periods of rising inflation rates, if nominal interest rates do not adjust fully or rapidly to changes in infla-

tion rates and the returns earned by private pension funds do not adjust rapidly and fully to nominal interest rates.

d) Ad Hoc Adjustments

To a large extent the private plans which adjust benefits in an ad hoc manner are applying the excess interest proposal. At present many employers periodically improve the pension benefits provided to former employees. This reflects in part the social contract nature of the pension plan and to some degree as well the improved earnings of the plan, because of either good management or higher nominal yields resulting from higher rates of inflation.

(i) Analysis

1. We do not have any fundamental disagreement with the existing ad hoc indexing schemes. Even though they do not meet the full demands for indexing and there is no guarantee that there will be any indexing from year to year, such schemes can be integrated with others that provide greater incentives to individuals to plan for retirement.

e) The Federal Government Accepting a Role as Lender of Last Resort to Employer-Sponsored Pension Plans if They Would Provide Fully Indexed Benefits

This scheme is in effect a modification of an insurance program of private employer-sponsored plans, but the focus would be on the unfunded liabilities and their implication for post-retirement indexing of benefits.

Under this framework, the government would:

1. Provide an incentive to private pension plans to offer fully indexed benefits by making borrowed funds available to the plans during rapid inflation escalation periods.

2. Tighten the regulation of employer-sponsored indexed benefit plans in such a way as to force them to deal with their unfunded pension liabilities more rapidly than at present.

For example, funds that were in a serious deficit position with regard to their future expected liabilities as a result of indexing post-retirement benefits would be required to fund these additional liabilities within three to five years, possibly by borrowing temporarily from the central authority an amount necessary to cover part of these unfunded liabilities. The rate of interest charged on such borrowings could be in line with the prime rate.

The plan would place a ceiling on the borrowed funds available - and in essence would force the pension plans to adjust their contribution rates to remove any systematic and long-term problems. It is conceivable that pension funds could exhaust their borrowing limits, and might then be required to seek out outside sources of funds to cover any deficits calculated at that time. Such borrowed funds would have to be repaid within a three to five year limit. Those funds whose performance was above the market, and which did not incur unfunded liabilities, obviously would not require any recourse to the lending authorities.

The main purpose of this scheme is to apply pressures upon employers and employees to introduce more flexibility into either contribution rates, benefit rates, or both, in view of the changing inflation climates; in effect, to force employees to directly recognize their responsibility in managing for their retirement income. If indeed higher unfunded liabilities resulted, it should be recognized that the sharing of the liabilities is a joint responsibility subject to negotiation between employees and employers. Since the pension benefits are at least in part a form of deferred wage, it is imperative that employers and employees negotiate any shortcomings in existing plans and decide whether tradeoffs should be made between current wage increases and future income.

(i) Analysis

1. This program, however, would not in itself guarantee that collective negotiations would result necessarily in post-retirement indexing of benefit payments. Nevertheless, we suggest that it is worthwhile to highlight the fact that errors are made in calculations which may require either changes in negotiated contribution rates or changes in benefit levels. Indeed, by highlighting these facts there may be further recognition that post-retirement indexed pensions are also an area for negotiation between employers and employees.

2. As we have suggested earlier, the existence of unfunded liabilities in itself might not be necessarily a negative factor, if employers use the funds they could otherwise have contributed to the pension plan for physical rather than financial investments in order to earn a higher rate of return.

3. This scheme does little to deal with the problems faced by past employees who are receiving fixed dollar pension benefits. Moreover, this proposal is attempting to force the resolution of the indexing of post-retirement pensions onto the second tier employer-sponsored plans.

f) The Inflation Tax Credit Plan

The federal government would accept the indexing cost of self-administered plans and employer-sponsored plans, but only up to a maximum limit under the inflation tax credit scheme.

All persons aged 68 or over would be entitled to claim a tax credit to offset the effects of inflation on a protected band of income, say, twice the floor now provided by government programs, OAS, GIS, and CPP, which are currently fully indexed. The amount of the credit could be based on the inflation rate during the taxation year in which the credit was claimed. The income offered inflation protection would include all sources other than rental income or earnings from employment with a view that those who had saved for retirement would retain the incentive for saving since they would be protected to some extent from inflation or income beyond that received from government programs.

The inflation tax credit would be based on a cumulative inflation rate for each year after age 68. In this way protection would be on a universal basis and not just for those in pension plans which may be indexed or increased by ad hoc payments from time to time. Government programs would continue to be indexed as before.

(i) Analysis

1. A key ingredient in this plan, aside from the manner in which the federal government assumes a responsibility for minimum real incomes for the aged, is the potential impact on the federal government budget. Aside from the worthwhile potential income distribution effects stemming from the proposal itself, there is an extra income distribution effect that would result from the increase in government outlays.

   As we noted in an earlier section, changes in tax revenues or expenditures have rather different income distribution effects. Thus the federal revenue system tends to be mildly progressive with respect to income, though federal government expenditures are very progressive in terms of their income impact. The secondary effect depends on whether the budget deficit is increased or decreased, and the financial effects on revenues or expenditures stemming from this.

2. A positive side to this proposal is that it explicitly recognizes that the government's role in the pension field is to ensure that there is a minimum pension in real terms available to all individuals upon retirement. Additionally, it recognizes that private pension benefits are only part of the stream of total earnings available to pension recipients. The federal government currently provides a minimum income level via its OAS and GIS payments - and both social security transfers are presently fully indexed. If

pension-age individuals have worked, they also earn a pension on their CPP/QPP contributions; once again the benefits are fully indexed for inflation. Current practices are designed so that the CPP/QPP share of the minimum income requirements would rise over time.

3. The fact that self-administered plans will also be provided with the same degree of index protection means that the pensionable employee and those under self-administered plans are treated equally.

g) Proposals to Extend the CPP/QPP

(i) Cofirentes +

The principal recommendations of the study were as follows: that the Old Age Security system be continued with the same objectives and structure as at present, but that if a guaranteed minimum annual income scheme is adopted, it replace the GIS. The study suggested that the QPP retirement benefits be increased by 50 per cent up to one-half the YMPE and 25 per cent of the portion above that up to the YMPE. In addition, that the current value of the YMPE should reach the average industrial wage level within a ten-year period. Finally, the indexing formula for both OAS and QPP pension payments would be continued.

(ii) The O'Connell Proposal

In a June 1975 study, Martin O'Connell, the M.P. for Scarborough East, recommended that the CPP/QPP be phased up from the maximum of 25 per cent of average industrial earnings to 40 per cent by 1985 and 50 per cent by 1990. In addition, OAS payments would be maintained at no less than 12 1/2 per cent of average industrial earnings, so that combined payments under CPP and OAS would generate up to 62 1/2 per cent of the average industrial wage upon retirement and both payments would be indexed fully for inflation. Mr. O'Connell also provided other recommendations with regard to mandatory membership in private pension plans, earlier vesting, and other adjustments in private plans which are not of direct relation to the issue of indexing.

(iii) The Cooper Proposal

Keith Cooper, in a paper presented to the Guelph Chamber of Commerce in June of 1978, stated:

"An adequate retirement pension would be provided by a pension equal to 75 per cent of final three-year average pay up to the Canada Pension Plan ceiling (the average wage in the country), and 60 per cent of final three-year average pay above the Canada Pension Plan ceiling. These percentages include both Canada Pension Plan and Old Age Security benefits which produce pensions

of approximately 40 per cent of earnings up to the average wage in the country. Therefore, a private pension plan providing 35 per cent of final three-year average pay up to the average wage in the country and 60 per cent of the average wages above this level is all that is needed to provide an adequate pension....In the areas of indexing we suggested that only that portion of the pension earned on income up to the average wage be indexed. In addition, we suggested that indexing occur only after inflation exceeds two per cent in any year....Both OAS and CPP benefits are fully indexed and they represent 40 per cent of average wages. We're only talking about a loss in purchasing power of two per cent on the balance of 35 per cent of average wages."

Mr. Cooper's remarks on indexing pensions are consistent with the life cycle model that was set out in Section 5 and would be supported by us; namely, that "indexing pensions earned on wages above the average Canadian wage....should be the concern of the individual....What is needed is for government to foster a more attractive climate for higher paid individuals to defer income in order to be able to apply such savings to offset the loss in purchasing power of that portion of the retirement pensions earned above the average Canadian wage."

(iv) Analysis

There is a strong similarity among the three sets of proposals. It is hard to quarrel with Cooper's suggestions as to what comprises an adequate retirement pension. However, one could argue that, at a minimum, an adequate retirement pension should be equal to 75 per cent of the final three-year average pay, up to the average wage in the country - that is, 75 per cent of a three-year average of the average industrial wage in Canada. If this, then, is the minimum adequate retirement pension, it can be achieved through the creation of a guaranteed annual income program for the elderly which would basically incorporate and expand the OAS/GIS system and minimize the role of the CPP/QPP plans. Or, a similar objective could be achieved by expanding OAS/GIS, CPP, and QPP along the lines recommended in the Cofirentes + and O'Connell studies.

With regard to indexing, we differ slightly with Cooper's proposal that it only occur for inflation rates in excess of 2 per cent per year. As we noted in Section 4, even with full indexing of retirement pension benefits, in relative terms, the elderly fall behind wages earners and other income recipients in the economy.(20) They do not gain from the productivity improvements in their retirement years, which suggests that, to the extent that private pension benefits represent part of the minimum adequate level, private pension benefits should be fully indexed.

The main beneficiaries in terms of income distribution, because of the full indexation of OAS/GIS, CPP, and QPP, appear to be retired workers who were low income wage earners. In many cases, they are not cov-

ered currently by private pension plans. Our analysis and conclusions are consistent with some aspects of Cooper's proposal that indexing of employer-sponsored plans should remain primarily a responsibility of the participants. Indeed, we suggested a plan whereby the federal government would provide an incentive for full indexation of private benefits - the incentive to stem from the creation of a lending authority to finance the plans during difficult inflation periods.

One last element in Mr. Cooper's plan was the proposal to provide additional incentives to private savings. If this were adopted, it would enable individuals to adjust their own savings decision more rapidly to unexpected and unanticipated changes in inflation rates.

We recognize the fact that further tax incentives for savings along the line of expanding RRSPs would tend to result in some net benefits to middle and upper income recipients and could possibly result in a redistribution away from low income recipients. Any possible adverse redistribution of income that could arise would not likely be any worse than the redistribution that would arise under the various other schemes that have been proposed - other than those in this last section.

Expanding CPP/QPP coverage would necessitate increases in the contribution rates and would place the financing burden directly on those who should face up to the retirement decision, namely, the individuals involved. Further, it would relieve some pressures on employer-sponsored pension plans to undertake ad hoc indexing for current retired employees or for future retired employees. The employer-sponsored pension plans would, in effect, have to fill a smaller vacuum in the overall pension picture. Further, such a scheme would assist those in low wage jobs at the bottom end of the income spectrum.

Expansion of the Canada Pension Plan could also be associated with variable contribution rates. Indeed it might be possible to make contribution rates variable over time with rates of inflation, as well as variable over an individual's lifetime to take into account the life-cycle savings interests. In this way, then, there would be fewer pressures on younger families and individuals to save or contribute to pension plans during their earlier years. They would contribute more in their later years when they could better afford to do so.

h) Summary

Clearly there are many alternatives to consider in terms of designing mechanisms to protect the incomes of the retired in Canada. These plans, or variants of plans, often are associated with other issues which deal with subjects external to the indexing of private employment pension benefits. Among these other issues are such subjects as:

1. the minimum acceptable level of retirement income (usually stated in terms of a percentage of the current average industrial wage);

2. the desired mix between social security pensions (OAS, GIS, and CPP/QPP), private employment pensions, and private savings;

3. the concern over the fact that the government indexes the incomes of public servants, while private employers feel they cannot match the indexing provisions.

Clouding the whole question of indexing of private post-retirement benefits are the associated financing difficulties for private employment plans which can be directly attributed to rising inflation, and the reality that it is very difficult to discuss, in other than very general terms, the income distribution effects of many of these measures.

In this study we reviewed a number of proposals, among them the government purchasing power bond scheme and the government insurance related scheme - the latter plan in particular was proposed by Professor James Pesando. As well, we considered present practices which result in ad hoc indexing of post-retirement incomes financed by the apparent excess interest earnings to plans resulting from inflation-induced higher interest rates. In this regard the authors suggested a plan which would have the federal government stand by as a lender of last resort to the private pension plans if the participants would negotiate full indexation of post-retirement benefits. We also reviewed an inflation tax credit plan, and as well considered a series of proposals to increase the coverage of the CPP/QPP. The last series of plans as well as the inflation tax credit plan take a very comprehensive approach to the entire pension system in Canada.

Our conclusions, based on a review of these various alternatives, are that we tend to favour some combination of expansion of the CPP coverage and extension of tax deductions for private contributions to pension plans (along the lines of RRSPs). We also feel that if the government were to get involved to compensate (or insure) for unexpected increases in the pace of inflation for the private plans, its involvement should be as equitable and as universal as possible. In our view, the labour-management participants should be encouraged to negotiate full indexation of post-retirement benefits.

We argued that the various insurance related schemes, or the purchasing power bond plan, were either possibly too risky for the federal budget, or possibly even unworkable. The inflation tax credit proposal uses federal tax dollars to provide inflation indexing on private benefits for persons 68 years of age or older, but still provides an incentive for employees and firms to negotiate separately an indexing option for retirement. There is a gap in the total expenditure depending upon the degree to which retirement savings increased in value with general inflation and the limit of the income protection. As we noted earlier, the proposal has the advantage of providing more real certainty to pensioners, providing a continuing incentive to save for retirement, and being somewhat universal in approach. A concern with this scheme, or

indeed any other scheme which ultimately falls back on the federal government, is that it is difficult to anticipate the federal government budgetary implications from this proposal.

In our view, any changes to the existing status should involve individuals directly so that they realize that they have to alter their savings-expenditure plans to take into account possibilities of unexpected changes in the rate of inflation. It is the individual who should make decisions on whether he desires higher indexed benefits in retirement years at the expense of lower current income or vice versa.

NOTES

(1) An idea of some of the parameters involved in a cost sharing process can be gleaned from the following rough calculations. In 1976, direct labour costs in Canada's manufacturing industries represented about 23 per cent of the value of their shipments. In firms with private plans in effect, employer contributions typically range between 4 and 6 per cent of total labour compensation. If firms with such plans faced a doubling in the cost of their private pension contributions due to mandatory post-retirement indexing, this would result in an increase in their total labour compensation payments equal to about 1 per cent of their sales revenues. If profit margins (the ratio of pre-tax corporate profits to sales) averaged 9 per cent, the doubling of employer pension costs - with no other changes - would result in about a 13 per cent reduction in the total stock of corporate profits in the companies with private pension schemes in operation. Of course, it does not necessarily follow that the full cost of indexation would, or should, be borne only by the firms. Costs could be shared with governments or the employees. Moreover, firms would, no doubt, pass on through higher prices some of their increased labour costs due to indexation of benefits.

(2) There has always been confusion in the economic literature concerning the real time dimensions of the short run and long run. The view on the long run tends to range from the Marshallian "day" - the period of time it takes fixed factors of production to become variable - to the Keynesian version that in the long run we are all dead. We tend to be somewhat sympathetic to Friedman's claim that the short-run adjustment may take up to several decades.

(3) Non-uniform inflation movements for different commodities or services are consistent with a market system playing its accepted resource allocation role. That is, non-uniform price increases are simply changes in relative prices and can be a function of underlying changes in the supply-demand balance.

(4) In the natural rate model the rate of inflation is proportional to the rate of growth in the money supply. For the government to move the unemployment rate below the natural rate and keep it there requires not only an increase in growth rate of the money supply, but an ever increasing rate of growth. When the central bank stops accelerating the growth of the money supply the unemployment rate will rise towards the natural level. However, at this stage the growth rate of the money supply will be greater than the rate of growth prior to the government's effort to reduce the unemployment rate. Hence, the corresponding rate of inflation will also be greater even though the unemployment rate returns to its natural rate.

(5) For this reason we would not support the need to construct a separate consumer price index for individuals 65 years of age and over. If, as the Statistics Canada calculations demonstrate, there is little difference in the resulting rates of inflation over a four-year period, a period during which there was a sharp increase in the rates of inflation in Canada for the offical target group and low income families, we do not believe that there would be any considerable difference in the rates of inflation as measured by a separate consumer price index for the retired population and for the official target group of the consumer price index.

(6) For that matter, a fixed weight price series has limited value in terms of judging the total budget impact of general inflation, since it does not capture substitution responses to generalized inflation.

(7) See Pesando and Rea (1977), Chapter 3.

(8) For further illustration, see Pesando (1977), p. 19.

(9) This statement is valid if debtors and creditors both have the same marginal tax rate on average and the nominal interest rate has fully adjusted for the marginal tax rate as well.

(10) Indexation definitely speeds up the adjustment to altered paces of inflation. Indeed, the escalation clauses in negotiated labour contracts are there to ensure that labour will not be surprised by a rapid rate of unexpected inflation.

(11) As Pesando and Rea note under the Pension Benefits Act, "Employer liabilities with regard to private pension plans are divided into three categories: (1) current service costs, which must be fully funded on a yearly basis; (2) initial unfunded liabilities arising from the establishment of a new plan or an amendment of an existing plan, which must be amortized over a fifteen-year period; and (3) experience deficiencies which refer to any deficit determined at the time of review of a plan due to factors other than (i) any initial unfunded liability, or (ii) the failure of an employer to make any payment as required by the terms of the plan, the Pension Benefits Act, or the regulations....The Pension Benefit Act requires that experience deficiencies be amortized over a five-year period."

(12) See James E. Pesando, "Sure We Can Afford Indexed Pensions" Benefits Canada, Maclean-Hunter, Vol. 2, No. 3, May-June 1978 and Leslie Barnes, "The True Cost of Pension Indexing," Civil Service Review, September, 1977.

(13) Stated in another way, if pension benefits were escalated at the same rate that money wages were, the pensioner would be in the same relative position as the worker. Over longer periods of time as wage gains exceed inflation gains, both would experience rises in real wages.

(14) Economists view pension benefits as deferred wages. This fact is clear since pension benefits represent part of the total compensation package and were negotiated in the collective bargaining arena. As we note here, the "deferred" component of the compensation package usually has no inflation protection, unlike current wage earnings.

(15) In their brief to a Commission, April 28, 1977, Leslie W.C.S. Barnes, Robert A. Crozier, and George T. Jackson voice the same objection to the Calvert value judgment, but in a harsher manner.

> "Calvert would have us believe that inflation does society a favour by placing unnecessary luxuries beyond the reach of the pensioner." (Page 13)

(16) Relatively fixed contribution rates tend to prevail in the real world for both the CPP/QPP and the private plans.

(17) Unquestionably, if private pension funds had access to a real purchasing power bond, their experience deficiency problems, as noted already, would be somewhat diminished.

(18) In the final analysis, Pesando favours his insurance scheme proposal over the purchasing power bond proposal.

(19) Effectively a purchasing power bond is a short-term financial instrument and to that degree the Government of Canada would be subject to liquidity drains just as it is in the annual November Canada Savings Bond campaign. Ottawa can handle these liquidity drains while the same is not true for private firms. This is why private firms choose to hold a relatively small proportion of their debt in short-term financial instruments. The 1970 and 1974 financial crunches in North America exemplify the difficulties corporations can get into when the term of the debt becomes unusually short in a tight monetary environment.

(20) Ironically, money wage settlements typically average about two percentage points higher than gains in inflation. Forgoing full private pension indexing can be regarded as almost a double "productivity" loss for the retired worker.

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The Impact of Social Security Financing on the Capital Markets in the 1980s

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March, 1979

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1. INTRODUCTION: THE ECONOMIC POLICY ENVIRONMENT IN THE 1980s

Decentralization of government economic activities, a general desire for less government involvement (direct and indirect) in the economy, and a redirection of policy interest towards micro-orientation (that is, towards specific regions, specific firms, specific groups of labour, specific consumers) and away from national or global objectives such as total employment, total production, all are part of a new fiscal reality which came into existence after the 1974-1975 world recession.

One can also observe that there appears to be a general drift in the attention of the national economic authorities towards stressing the advantages of savings and investment. While it is usually not stated specifically that there must be a trade-off between spending for capital formation and spending for consumption purposes, policy-makers are favouring the reduction, in a relative sense, of consumer spending. Moreover, one detects a general desire to reduce the government's regulatory role, since it is felt that regulations are inefficient and add to private costs of doing business. For example, it has become commonplace to point out that marketing boards for agricultural products not only result in higher prices for the consumer, but also have not generated higher incomes for the farmer.

The general tenor of public attitudes and government policies suggests that traditional macro-economic-oriented measures which typically were designed to sustain high levels of employment and production will be used far more carefully and infrequently in the future. Thus we note that the federal government not only has stated its desire to shrink the rate of growth of government spending, but also has indicated that its spending must rise at a slower rate than the total economy, thus lowering the relative share of the public sector in the economy. The end result of this spending growth rule is that the pursuit of macro-economic objectives using fiscal policy levers is somewhat limited when the objective is to expand the economy. The fact that governments have limited their maximum rate of increase in spending means that expansionary fiscal measures must come from lower taxes rather than from higher government spending. This places tax policy at the centre when fiscal stimulus is the goal. Parenthetically, when restriction is the goal, the new government spending rule does not bind fiscal policy, as the desired degree of restriction is consistent with slower growth rates in government spending.

At present, fiscal policy is also limited by the fact that deficits are large in absolute terms and historically high relative to the size of the economy. Thus fiscal policy is restrictive at present because there are two effective constraints, a constraint on the size of the government deficit, and a constraint on the rate of increase of government spending. Flexibility of tax policies is frozen essentially by the former constraint.

On the other side of the coin, the use of monetary policy is also restricted. The Bank of Canada has adopted a rule of behaviour to gradually moderate the rate of growth of the money stock (M1 definition) from the high rates of increase of recent years. Since 1975 this goal has been followed fairly rigidly and has resulted in conflicts over goals. When a more expansive policy is required, which could be interpreted to mean a faster rate of growth in the money stock than the target rate, there is some limitation in the degree to which monetary policy can pursue the expansive goal. It should be noted that other industrial countries have adopted rather similar game plans for monetary and fiscal measures, though there are some variations. In the United States, for example, the money supply targeting process began even earlier, though they are more flexible on the subject of a fiscal rule. Exchange rate policy in the United States has not been a major preoccupation of the economic authorities, but exchange rate concerns have always played an important role in Canadian economic policy-making constraining central bank freedom vis-à-vis its impact on the domestic economy. In view of the fact that the exchange rate constraint is taken more seriously in Canada than the United States and that money stock targeting will likely continue into the 1980s, this suggests that monetary policy will tend to be restrictive over the longer pull in Canada. Indeed, if there are any shifts in the current policy stance, it will likely be towards some easing at the fiscal level.

2. ENERGY PROSPECTS AND ENERGY INVESTMENT: THE 1980s

In 1976, Canada's Department of Energy, Mines and Resources (EMR) released a study outlining a national strategy for self-reliance. The report, entitled "An Energy Strategy For Canada - Policies for Self-Reliance," is important since it charted Ottawa's view of future energy needs in Canada (1976 through 1990). As well, it included an outline of a Canadian energy strategy.

The EMR report contrasted two potential energy price scenarios, a low-price scenario, which assumed no "real" change in the price of domestic oil, but did allow natural gas prices to rise to their commodity equivalent value - and a high-price scenario which basically involved domestic energy prices moving to the international price levels.

Since the release of the report, Canada has followed a policy consistent with the high-price scenario. The original asumptions used in 1976 were the following:

> "In this scenario, it is assumed that oil prices increase relatively faster than the prices of other goods and services until about 1978, when they reach a level that is roughly equivalent to the current international price (about $13.00 per barrel landed in Montreal in 1975 dollars). Prices for electricity and coal are assumed to increase at the same rate as oil prices and the price of

natural gas is...assumed to adjust to 'commodity-equivalent' value with crude oil ($2.25 Mcf at the Toronto city-gate, in 1975 dollars) by the late 1970s. After 1978, all energy prices are assumed to increase at only the general rate of inflation."

According to the EMR study, to produce and achieve Canada's goals of self-reliance in energy would require about $180 billion (constant 1975 prices) in total investment between 1976 and 1990. The distribution of this energy investment is set out in a chart from the EMR study (see Chart 1 and Table 1). The concerns which sparked the current study can be detected in the sharp bulge in pipeline investment centred in the early 1980s.

The EMR study notes that this large anticipated growth in energy investment must be, ultimately, at the expense of investment in other fields. The report projected the energy investment share of GNP to peak in the 1980-1985 period at 6.2 per cent:

1950 - 1975	3.5 per cent of GNP
1976 - 1980	5.0 per cent of GNP
1980 - 1985	6.5 per cent of GNP
1986 - 1990	4.2 per cent of GNP

As the EMR study noted

"The construction of Northern pipelines will require substantial issues of debt and equity and, until deliveries commence, will have to be financed entirely from externally generated funds. The scale of the projects envisaged, the uncertainties surrounding their construction and operation, and the timing of their possible demands on capital markets, suggest that it may be necessary to consider government financing assistance in some form. At a minimum, it will be desirable to coordinate possible demands for capital in a manner that minimizes the strains on Canadian capital markets." (page 110)

Furthermore, a glance at the accompanying EMR chart strongly suggests the possibility of a boom-bust economy in the early 1980s as pipeline investment accelerates sharply between 1978 and 1984 and decelerates sharply between 1984 and 1989. In the EMR report there was also a projection of the impact of the "high-price scenario" on the "energy" balance of payments - expressed in 1975 prices, a $2.2 billion deterioration in the oil trade account between 1976 and 1985, with the deficit in oil trade projected to reach $4.5 billion by 1985. The total energy trade account is projected to be in an $800 million deficit in 1985 (expressed in 1975 prices).

The Toronto Dominion Bank, in a study on energy investment demands, has set out estimates of total investment and its sub-components for the period 1977-1990. According to the TD projections, energy investment as

a proportion of GNP reaches 6.7 per cent in 1990. This compares with the EMR projection of 4.2 per cent. Professor David Foot, in a study for the Ontario Economic Council, also projects an early peaking in relative energy investments (1983), and by 1987 the energy investment-GNP ratio falls to 4.9 per cent. Finally, at a First Ministers' conference, the Minister of Energy, Mines and Resources listed a series of energy investment projects for the 1980s. In constant 1977 prices, the department identified a large number of projects, with a low side figure of $55 billion. Many specific projects were mentioned, but without accompanying construction cost figures.

The thrust of these scheduled projects, and related studies on aggregate energy-oriented investment, imply a significant tilt in the demand components of the Canadian economy in the direction of public and private energy investment spending. This study notes in the following section that, to some extent, the shift towards energy investment in the 1980s will occur as the residential construction sector declines on a relative basis.

Table 1
Estimated Energy-Related Capital Requirements: 1976-1990

(High-price scenario, billions of 1975 dollars)				
	1976-1980	1981-1985	1986-1990	Total
Electric power	21.7	32.5	37.0	91.2
Pipelines	5.7	19.2	3.0	27.9
Petroleum				
Exploration and development	10.6	15.5	14.2	40.3
Refining and marketing	3.9	4.1	4.8	12.8
Oil sands	3.0	2.3	.3	5.6
Coal(a)	.8	1.5	.9	3.2
Energy investment	45.7	75.1	60.2	181.0
Estimated GNP	912.1	1,162.0	1,438.5	3,512.6
Energy investment as per cent of GNP	5.0	6.5	4.2	5.2

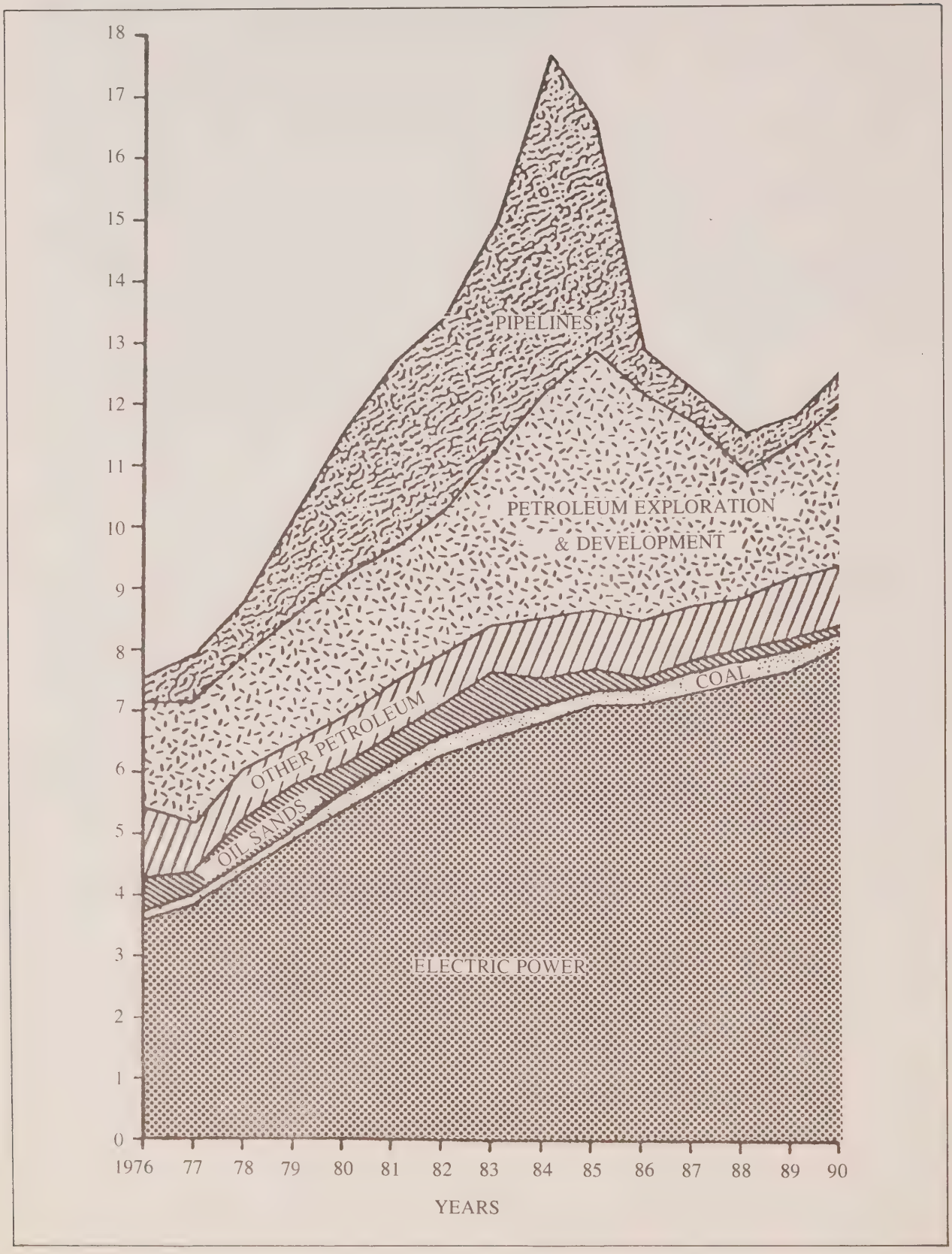
(Low-price scenario, billions of 1975 dollars)				
	1976-1980	1981-1985	1986-1990	Total
Electric power	29.2	43.0	58.4	130.6
Pipelines	2.5	2.6	2.8	7.9
Petroleum				
Exploration and development	6.3	4.8	4.0	15.1
Refining and marketing	3.9	4.1	4.8	12.8
Oil sands	1.5	.2	.1	1.8
Coal(a)	.8	1.5	.9	3.2
Energy investment	44.2	56.2	71.0	171.4
Estimated GNP	912.1	1,162.0	1,438.5	3,512.6
Energy investment as per cent of GNP	4.8	4.8	4.9	4.9

a The estimates related to coal do not include estimates of new investment necessary to upgrade transportation systems.

Source Energy, Mines and Resources, Financing Energy Self Reliance, 1977, p. 108.

Chart 1
Components of Energy Investment: 1976-1990 (High-Price Scenario)

(Billions of 1975 Dollars)



Source EMR Report, p. 107.

Table 2
Canadian Investment and Savings: 1976-1990

Year	Housing and social capital: Housing	Social	Total	Industrial capital: Energy	Other industries	Total	Total capital	Energy capital as a per cent of industrial capital	Gross national expenditure	Total capital as a per cent of GNE	Net capital inflows	Domestic savings	Domestic savings as a per cent of GNE
	(Billions of dollars)												
1964	2.4	2.0	4.4	1.3	5.5	6.8	11.2	19.1	50.3	22.3	.8	10.4	20.7
1976	11.4	6.6	18.0	7.7	17.5	25.2	43.2	30.6	184.5	23.4	4.9	38.3	20.8
1977	12.5	6.8	19.3	9.4	17.0	26.4	45.7	35.6	205.1	22.3	4.3	41.4	20.2
CAGR(a) 1964-1977	+13.5	+9.9	+12.0	+16.4	+9.1	+11.0	+11.4		+11.4				
1978	13.8	7.5	21.3	10.7	19.3	30.0	51.3	35.7	228.8	22.4	4.5	46.8	20.5
1979	15.3	8.2	23.5	12.2	22.4	34.6	58.1	35.3	254.9	22.8	4.6	53.5	21.0
1980	16.9	8.9	25.8	13.4	25.4	38.8	64.6	34.5	281.7	22.9	4.7	59.9	21.3
1981	18.6	9.7	28.3	15.5	29.0	44.5	72.8	34.8	309.3	23.5	4.8	68.0	22.0
1982	19.9	10.5	30.4	17.8	31.2	49.0	79.4	36.3	338.6	23.4	4.9	74.5	22.0
1983	21.6	11.3	32.9	20.5	35.0	55.5	88.4	36.9	370.9	23.8	5.0	83.4	22.5
CAGR(a) 1978-1983	+9.4	+8.5	+9.1	+13.9	+12.6	+13.1	+11.5		+10.1				
1984	23.7	12.1	35.8	23.4	39.0	62.4	98.2	37.5	405.4	24.2	5.5	92.7	22.9
1985	26.0	13.0	39.0	26.4	43.8	70.2	109.2	37.6	443.1	24.6	6.0	103.2	23.3
1986	28.6	13.9	42.5	29.8	49.3	79.1	121.6	37.7	484.3	25.1	6.5	115.1	23.8
1987	31.0	14.9	45.9	33.7	55.2	88.9	134.8	37.9	529.3	25.5	7.0	127.8	24.1
1988	33.7	16.0	49.7	38.4	61.7	100.1	149.8	38.4	578.6	25.9	7.5	142.3	24.6
1989	36.5	17.1	53.6	42.2	69.1	111.3	164.9	37.9	632.4	26.1	7.5	157.4	24.9
1990	39.6	18.3	57.9	46.5	77.4	123.9	181.8	37.5	691.5	26.3	7.5	174.3	25.2
CAGR(a) 1983-1990	+9.0	+7.1	+8.4	+12.4	+12.0	+12.2	+10.8		+9.3				
CAGR(a) 1977-1990	+9.3	+7.9	+8.8	+13.1	+12.3	+12.6	+11.2		+9.8				

a Compound annual growth rate, per cent.

Source The Toronto Dominion Bank, "Energy Investment and The Canadian Economy" Occasional Papers from The Department of Economic Research, Vol. 6, No. 2, June 1977.

Table 3
Estimated Energy-Related Capital Requirements: 1977-1987
(High-Price Scenario)

	Endogenously generated	Exogenous addition	Total	Proportion of gross national product
	(Billions of 1971 Dollars)			(Per cent)
1977	3.59	1.50	5.09	4.2
1978	3.81	1.60	5.41	4.3
1979	4.08	2.70	6.78	5.1
1980	4.18	3.65	7.83	5.6
1981	4.52	4.30	8.82	6.0
1982	5.04	4.80	9.84	6.4
1983	5.28	5.60	10.88	6.7
1984	5.59	7.20	12.79	7.5
1985	5.85	6.45	12.30	7.0
1986	6.05	3.50	9.55	5.3
1987	6.29	2.85	9.14	4.9
Total	54.28	44.15	98.43	

Source D. K. Foot et al., The Ontario Economy 1977-1987, Ontario Economic Council, 1977, p. 77.

Table 4
Canadian Energy Capital Expenditures 1976-1990 (Scenario A)

Year	Petroleum exploration and development	Oil sands and heavy oils	Refining	Natural gas and oil marketing and distribution	Pipelines	Coal	Electric Power	Total energy
1976-1980	10,580	2,995	1,430	2,510	5,710	780	21,700	45,705
1981-1985	15,450	2,275	1,035	3,080	19,205	1,485	32,300	74,830
1986-1990	14,240	305	1,340	3,455	3,045	990	37,200	60,575
Total	40,270	5,575	3,805	9,045	27,960	3,255	91,200	181,110

Source EMR Report, p. 10 (see Table 1).

3. DEMOGRAPHY AND HOUSING REQUIREMENTS: 1977-2000

In March of 1978 the CMHC published a series of projections for Canadian housing requirements to the year 2000. The CMHC projections were based on a set of fairly standard assumptions and population projections for Canada. The standard series of assumptions covered net immigration, fertility rates, mortality rates, marriage rates, divorce rates, and headship rates.

In the case used for the purpose of its report, the CMHC study assumed a net level of 80,000 immigrants in 1978, increasing to 90,000 in 1979 and remaining at 100,000 per annum thereafter. In its projection, Canada's population rises from 23.1 million in 1971 to 24.3 by 1981 and 27.3 million by 1991.

In terms of the underlying housing demand requirements, the important demographic variables are the number of new households formed annually and the existing stock of unsold housing units. For example, according to the CMHC study, household formation accounted for about 86 per cent of total housing requirements in 1977. The small residual housing requirements (14 per cent) were accounted for by the demand for replacement housing and allowances for vacancies.

Since it is the household formation figures that are so critical, the net household formation statistics themselves can be broken down into two categories - family formation and non-family formation households. As a result of the post-war baby boom, net family formation is projected to have increased rather sharply in the second half of the 1970s. It is clear that this trend is due mainly to the post-war baby boom group attaining the prime ages for family formation in the second half of the 1970s. But beyond 1982 there is a decline in net household formation resulting from the decline in fertility rates during the 1960s and early and mid-1970s.

The number of households headed by single persons increased rapidly during the first half of the 1970s as a result of both social and economic developments. Despite this trend, the CMHC projection suggests that the households headed by unmarried individuals will tend to decline through the 1980s. That is, there is a combination of increasing net family household formation until 1982 and declining non-family household formation, which results in a peak of total household formation of 227,944 in the year 1980. After 1982, with both components declining, a trough of 110,975 new household formations is reached by the year 1997. It is precisely because of these declining trends in household formation that the housing requirements are expected to decline.

In the accompanying projections, total housing requirements peak in 1980 at 266,000 units, a demand of which will partly be met by the construction of mobile homes. Afterwards, a substantial decline in housing requirements is projected through the 1980s and part of the 1990s re-

flecting the downward trend of net household formation over the same period (see Table 5).

As Table 6 below indicates, some rather significant geographical shifts occur within this projection of declining housing requirements. In 1977, it was estimated that Quebec accounted for about 23.6 per cent of housing requirements. Quebec's share is projected to decline to 21.1 per cent of national requirements in 1985 and to a dramatically low 7.9 per cent figure in the year 2000. Ontario sustains its relative proportion of the national picture. Alberta and British Columbia will make up much of the relative losses to be experienced by Quebec. Stated in another way, while the absolute change in regional housing requirements is expected to be negative in every major region of Canada between 1977 and the year 2000, Quebec will suffer the greatest absolute decline in housing requirements - from an absolute level of about 52,000 units in 1977 to less than 9,000 units by the year 2000. Over the shorter time interval, 1977 through 1985, the greatest relative declines in housing requirements will occur in Saskatchewan, Quebec, and Manitoba.

The low housing requirement figures for the province of Quebec stem from the net migration assumptions as well as from the attendant population projections by province. For example, in the CMHC study, it was estimated that Canada would attract 80,000 net immigrants in 1978, more than 50 per cent of whom would move directly into Ontario. Quebec's share of net international migration in 1978 was expected to be only a little bit higher than Alberta's.

In terms of interprovincial migration, possibly the most important element in the regional forecast is the assumption that Quebec will lose 25,676 people in 1978, 23,416 in 1979, and will continue to lose at the rate of 16,635 per year after 1982. Ontario also becomes a net loser in terms of interprovincial migration, though the net losses are not as severe as Quebec's. In this picture, Alberta and British Columbia prove to be the big gainers in terms of interprovincial migration, with Alberta and British Columbia gaining during the post-1982 period - 18,669 and 10,083 per annum respectively.

Table 5
Summary of Projected Housing Requirements for Canada: 1977-2000

Year	Heads of households			Demolitions	Allowance for vacancy	Total requirements
	Family	Non-family	Totals			
1977	146,040	74,313	220,353	25,090	10,691	256,134
1978	149,499	72,744	222,243	25,763	10,779	258,785
1979	154,269	71,315	225,584	26,318	10,915	262,817
1980	158,542	69,404	227,944	27,047	11,001	265,994
1981	160,021	65,769	225,790	27,774	10,881	264,445
1982	160,538	61,547	222,085	28,358	10,683	261,126
1983	159,842	56,468	216,310	28,895	10,393	255,598
1984	157,881	50,112	207,993	29,505	9,975	247,473
1985	154,378	42,867	197,245	30,110	9,442	236,797
1986	149,236	35,750	184,986	30,848	8,838	224,672
1987	142,761	29,790	172,551	31,598	8,229	212,378
1988	135,515	24,885	160,400	32,376	7,639	200,415
1989	128,032	21,344	149,376	33,073	7,104	189,553
1990	120,843	19,052	139,895	33,893	6,644	180,432
1991	114,408	18,593	133,001	34,851	6,304	174,156
1992	108,393	19,096	127,489	35,667	6,037	169,198
1993	103,149	19,190	122,339	36,727	5,788	164,854
1994	98,291	18,852	117,143	37,870	5,538	160,551
1995	94,117	19,532	113,649	39,103	5,376	158,128
1996	90,968	20,776	111,744	40,396	5,288	157,428
1997	88,382	22,593	110,975	41,450	5,263	157,688
1998	86,504	24,607	111,111	42,645	5,282	159,038
1999	85,374	26,539	111,913	43,994	5,333	161,240
2000	84,771	28,613	113,384	45,345	5,415	164,144

Source CMHC, Housing Requirements Model: Projections to 2000, March, 1978, p. 24.

Table 6
Regional Housing Requirements: 1977-2000

	1977		1985		2000		Percentage Change		
	Number	Per cent of total	Number	Per cent of total	Number	Per cent of total	1977-1985	1985-2000	1977-2000
Newfoundland	2,912	1.3	3,569	1.8	1,427	1.2	22.6	-60.0	-51.0
Prince Edward Island	956	.4	1,048	.5	843	.7	9.6	-19.6	-11.8
Nova Scotia	5,386	2.4	5,890	2.9	3,252	2.9	9.3	-44.8	-39.6
New Brunswick	5,176	2.3	5,991	3.0	4,442	3.9	15.7	-25.8	-14.2
Quebec	52,051	23.6	41,700	21.1	8,979	7.9	-19.9	-78.5	-82.7
Ontario	78,572	35.6	71,753	36.4	42,728	37.7	-8.7	-40.4	-45.6
Manitoba	7,574	3.4	6,316	3.2	3,804	3.3	-16.6	-39.8	-49.8
Saskatchewan	9,695	4.4	6,227	3.1	4,313	3.8	-35.8	-30.7	-55.5
Alberta	29,512	13.4	26,980	13.7	23,643	20.8	-8.6	-12.4	-19.8
British Columbia	28,268	12.8	27,209	13.8	19,524	17.2	-3.7	-28.2	-30.9
Canada(a)	220,353		197,245		113,384		-10.5	-42.5	-48.5

a The national figures include the Yukon and Northwest Territories.

Source CMHC, Housing Requirements Model: Projections to 2000, March, 1978, p. 21.

4. THE ECONOMY, THE CONSUMER, AND THE INFLATION OUTLOOK: THE 1980s

a) Introduction

During the early 1970s when the Canadian dollar was trading at about parity with the U.S. dollar, Canada experienced a strong period of real consumer spending. This strong consumer demand growth, which ended in 1975, was fuelled by a rather remarkable rate of growth in real wages accompanied by reasonably rapid growth rates in employment. Both of these factors more than offset the rise in the savings propensity of Canadian families, thus allowing real consumption to advance at historically high rates of increase.

However, the sluggish growth in consumer spending since 1975 has been accompanied by relatively poor performance for the entire economy and a widening gap between actual and potential output.

Since the mid-1960s, real wages have increased at about twice the rate of increase in real labour productivity, a development not consistent with longer-run economic relationships. Even with the arrival of economic stagnation after 1973, significant real wage gains were recorded in 1974 and 1975. Since 1976 these gains have been eroded by decelerating money wage increases and continuing high inflation rates (see Table 7).

What is important at this time is the possibility that real wage gains in the immediate future, say until the mid-1980s, will trend at a lower rate of increase than during the decade which ended in 1976. The factors at work squeezing real worker earnings are inevitably the same factors which will squeeze real consumption and hence the growth of the economy. Since the consumer sector represents about 63 per cent of Canada's gross national expenditures the strength of consumer spending in the 1980s will reflect the general strength of the economy.

What are the factors which typically impact on consumer spending decisions? Economists typically evaluate consumer spending in terms of several basic ingredients - wage and price movements, employment gains, the public's propensity to save or spend, and the general level of confidence. It follows that the joint interaction of these factors must be in the right direction to generate strong consumer spending. At this point the employment effect and the savings decisions will be dealt with in a very summary fashion. On the employment front, job creation was fairly rapid through most of the 1970s, though since 1975 the general economic malaise has been associated with lower rates of gain in new jobs. In 1978, over 400,000 new jobs were created, but employment growth has been trending at a lower rate in the latter part of the 1970s. This report notes that in the future, job creation must be modest as full capacity economic growth rates are expected to moderate in the 1980s from the 1970s.

The sharp increase in the personal savings rate out of disposable income in the 1970s moderated the levels of consumer spending prospects. While this report deals with this subject later on, it is evident that the high savings rate in Canada is associated with tax deferment incentives (RRSPs, RHOSPs, etc.), and a high inflation environment. It also may reflect the shift of medical care expenses from the consumer to the provincial purse.

The wage and price impacts are explored in the following section.

b) Prices and Costs in the 1980s

(i) Wages

On the wage front, it is clear that the relatively large gains of the early and mid-1970s now represent an era which has passed. One source of rapid wage escalation between 1966 and 1975 was the public sector which now appears likely to lag behind the private sector in terms of money wage gains. Indeed, in early 1979 concerns over money wage escalation were primarily focused on the private sector. In this report money wages are projected to increase 7.7 per cent per annum over the period 1978 to 1985.

(ii) Energy Prices

In a 1976 statement, the federal government announced its intention to move Canadian oil prices to a comparable level with the international prices set by OPEC (The Organization of Petroleum Exporting Countries). Since that time the well-head price in Canada has subsequently risen by $4/bbl. to the current level of $12.75/bbl. (effective July 1, 1978). After transportation and gathering costs are added, the delivered price into eastern Canada is $13.70/bbl.

The federal government and the province of Alberta have agreed that the current well-head price of $12.75/bbl. will remain until July 1, 1979. It will be increased then by $1/bbl. with a second $1/bbl. rise planned for January 1, 1980. This will bring the average well-head price to $14.75/bbl. and the delivered price into both Toronto and Montreal to $16.55/bbl. (including an $.85/bbl. surcharge to refineries to compensate for the world prices received by the two tar sands producers).

The government also announced its intention to increase natural gas prices to an energy equivalent price with oil. In November of 1975, the Toronto city gate price was established at $1.26/mcf which was 85 per cent of the commodity value of oil. The gate price has subsequently been raised four times and is now $1.85/mcf (88 per cent of its oil equivalent).

These resulting energy price increases have had a sharp inflationary impact on other prices and costs. Indeed, it is estimated that for

every $1 a barrel increase in Canadian crude oil prices, there is about a .6 per cent hike in the Consumer Price Index.

(iii) Food Prices

Another important element in the recent rapid rise in Canada's cost of living has been the instability of agricultural markets and food prices. Food purchases by Canadian consumers have represented a growing proportion of their total spending. Since 1970, the sharp increases in the Consumer Price Index were largely the result of higher food costs. In a nutshell, since 1972, the rate of increase of food prices in Canada has been unusually high. For example, food price increases in the consumer cost-of-living basket tended to fall between the price hikes of consumer goods (on the low side) and consumer services (on the high side). That relationship appeared to break in 1971 as food prices averaged 14.6 per cent annual rates of increase between 1973 and 1975. Food prices rose 2.7 per cent in 1976, 8.3 per cent in 1977, and 17 per cent in 1978.

Thus in the slower world economic growth environment, food prices are continuing to rise at double the rate of increase posted in the 1960s. Moreover, compounding the problem of higher prices in the future is the fact that energy is an important factor in the cost of producing agricultural products. Food prices can no longer be regarded as a stabilizing factor in consumer prices as they were between 1966 and 1971, when they rose at a marginally lower rate of increase than non-food items.

(iv) The Trade-off between Inflation and Unemployment

In terms of the unemployment inflation trade-off models, the Canadian and U.S. experience since the early 1960s has been one of progressively deteriorating alternatives. That is, progressively higher levels of employment are required to maintain a given level of inflation, and it does not follow from past trends that the trade-off options will improve.

It used to be thought that when inflationary expectations rise and the trade-off between unemployment and inflation worsens (virtually the experience of the 1971-1975 period), a scaling down of such inflationary expectations to former lower levels would restore original and more acceptable inflation unemployment options. Indeed, the rationale for short-term incomes policies was predicated on a model which viewed a reduction of inflation expectations as consistent with the restoration of better trade-off options between inflation and unemployment.

However, the movements of this trade-off curve appear asymmetrical. That is, inflationary expectations in the United States declined after the 1974-1975 recession, but the unemployment rate accompanying the current 6-8 per cent rate of inflation has been well in excess of that pre-

dicted by a return to better trade-off options based on the 1969-1970 experience. It is interesting to speculate as to why the unemployment-inflation trade-off option has not only progressively worsened between 1971 and 1975, but appears to be incapable of being completely restored to where it once existed. Ottawa would be happy to be able to restore the range of unemployment-inflation alternatives it had back even in 1970 - yet it appears that this goal is virtually unattainable.

In our opinion market power, both in the product and labour markets, has created an extra degree of rigidity in the system following every wave of inflation. As a result of stop-go policies, there has been a continual upward movement in the application of such powers which in effect increases the inflation plateau from which the next inflation cycle commences. Thus the rate of price inflation in the late 1970s, consistent with a given unemployment rate, has ratcheted up considerably from that of the middle 1970s. The fact that Canada has experienced such dramatic inflation rates since 1972 has shortened labour contracts and introduced escalation features into both corporate contracts and business-government relationships.

If a new round of inflation is triggered by events external to Canada, as was the case in 1973-1974, such inflationary shocks will move even more swiftly into labour markets, administrative prices, and interest rates, than they did in the mid-1970s. The Canadian public has become increasingly conscious of inflation and a host of defences have been built into contractual arrangements against possible changes in prices.

(v) An Inflation Projection Based on Domestic Costs and External Factors

In 1977 and 1978 Canada moved a long way towards bringing its domestic costs under control (and moderating its internal inflation factor), but external inflation was the significant problem. In 1977 and 1978 the twin facts that U.S. inflation remained stubbornly high (above 6 per cent), while at the same time Canada's dollar declined sharply relative to the U.S. dollar (7.3 per cent in 1977, 6.8 per cent in 1978) have contributed to higher import costs and higher domestic inflation in 1977 and 1978.

Canada is an open economy, and thus its rate of inflation is a product of both internal and external inflation forces. Since 1970, the pattern of inflation in Canada could be fairly well explained by a rough 30 per cent external and 70 per cent internal weighting scheme.

On the domestic front, the internal inflation pressures can be explained roughly by the simple difference between the rates of change in Canadian money wage settlements and Canada's labour productivity growth rate. That is, it is argued here that movements in unit labour costs ultimately set the stage for domestic-induced price hikes. The figures

presented in Table 8 below imply the following rough approximation vis-à-vis inflation determination: that is, the percentage change in the GNP deflator equals .7 times the difference between the percentage change in wage settlements and productivity changes plus .3 times the percentage change in the Consumer Price Index plus the percentage change in the external value of the Canadian dollar.

It may be helpful at this stage to develop some simple arithmetic relationships which describe the interaction of the two underlying inflation components. Since the bulk of Canada's foreign trade occurs with the United States, that country's consumer inflation rate is employed as a proxy for world price movements. Moreover, movements in the relative price of the Canadian dollar against the U.S. dollar have an inflationary effect which can also be regarded as external in origin. For example, the estimated 6.8 per cent decline in the average value of the Canadian dollar in 1978 relative to 1977 indicates that the Canadian consumer paid (.3 X 6.8) or about 2 per cent more in Canadian dollars for a basket of U.S. goods and services in 1978 than in 1977.

This specific identification of the role of foreign inflation in Canada's price indices is perhaps too simple in that the effect of foreign prices on our domestic scene varies with the business cycle, and is not static (firms vary their price mark-up over unit labour costs with business conditions as well). Nevertheless, even with all its drawbacks, this framework illustrates the way in which both positive and negative factors work in the Canadian inflationary process.

Looking ahead, the prospects for Canadian inflation do not appear very satisfactory, despite the improved labour cost scene which has recently emerged. The simple arithmetic demonstrates this case.

The projections illustrate a blend of assumptions which could result in an average 5.5 per cent per annum rate of inflation between 1978 and 1985, and an average 5 per cent rate of inflation over the period 1985-1990. In fact, the price level over these twelve years more than doubles, and the 5.3 per cent average inflation projection between 1978 and 1990 is somewhat less than the rough estimates of the inflationary-expectations component in the longer-term yields in Canada.

(vi) Inflation Projection Based on Quantity Theory

The interaction between the money supply, inflation, real GNP, and the income velocity of money can be dissected in terms of an identity called the equation of exchange. If the above terms are represented by index numbers - that is, if the price index is called P, the money supply index M, the velocity of money V, and real GNP is T, then the national accounting expression MV=PT must hold. Stated in another way, the supply of nominal GNP (PT) must equal the demand for nominal GNP (MV). Alternatively, a dynamic expression for the equation of exchange

states that the sum of the rates of change in the money supply (M) and the velocity of money (V) must equal the sum of the rates of change in prices (P) plus real GNP (T). The long-run theory that inflation is a monetary phenomenon usually is postulated by assuming long-run output (T) is independent of movements in the money supply (M). In our work, though, we have allowed for a continuous rise in the ratio of GNP to money stock - a trend pervasive in the 1970s.

In the final analysis all economists accept a long-run relationship between the growth rate of the money supply and the rate of inflation. Our projection, which encompasses about a ten-year time span, is no different. It is specifically assumed that the narrowly defined money supply (M) will increase at a 7.7 per cent annual rate between 1978 and 1985, and at a 6.4 per cent annual rate between 1985 and 1990. With the income velocity of money (the ratio of GNP to M1) rising at an average annual rate of 2.5 per cent, this forecast generates a gain in the GNP price index of 5.5 per cent per annum until 1985 and 5 per cent per annum over the remaining years of the decade. If the money supply (M1 definition) does not become more efficient (that is, if the income velocity of money does not increase), then of course the rate of inflation will be lower assuming the above money supply growth rates.

The above projected rates of inflation were derived by estimating the longer-term growth in Canada's real GNP on the basis of labour force and productivity projections. Once again, an explanation of relationships must be made. It is assumed that Canada's work-force and labour force will grow at approximately the same rate in the 1980s. In a physical sense, real GNP can be defined as output per worker (or labour productivity) multiplied by the size of the work-force. This is why the rate of change in real GNP can be approximated by the long-term rate of change in the labour force plus the rate of change in labour productivity. In this study the Department of Finance's assumptions on labour force growth moderation in the 1980s accompanied by steady 2 per cent per annum productivity growth rates are adopted. The accompanying projections for real GNP, inflation and nominal GNP are set out in the last three columns of Table 10.

According to these projections, the rate of growth of GNP in current dollars is sharply lower during the decade of the 1980s and the first half of the 1990s. The difference reflects partly a slower growing real economy - particularly after some GNP catch-up occurs between 1978 and 1985. As well, the assumptions concerning inflation for the 1980s were discussed earlier - and they indicate that the inflation in the 1980s will average at a lower pace than the 1970s experience, because of a moderation in the rate of expansion of the money supply.

Table 7
Relationship between Real Wage Gains, Consumption, and Labour Productivity: 1970-1977 (Average Annual Rates of Change)

	Real consumption	Real output/worker (productivity)	Real wages
		(Per cent)	
1970-77	6.0	1.9	1.9
1977	2.8	.9	.7

Notes: Real output/worker uses real GNP as a numerator and total employment in the demoninator.

Real wages uses money wage settlements (ex construction) and the implicit price deflator.

Source Bank of Canada Review, December 1978.

Table 8
Inflation Determination in Canada 1963-1977 and a Forecast 1978-1990

	External factors			Domestic factors			Weighted sum internal and external factors	Per cent change GNP deflator
	Per cent change Canadian/U.S. dollar	Per cent change U.S. CPI	Sum external factors	Per cent change wages(a)	Per cent change labour productivity	Sum internal factors		
	(1)	(2)	(3)=2-1	(4)	(5)	(6)=4-5	(7)=(.3x3)+(.7x6)	(8)
1963	.0	1.2	1.2	3.1	2.7	.4	.6	1.8
1964	.0	1.3	1.3	4.7	2.9	1.8	1.6	2.5
1965	.0	1.7	1.7	5.4	2.7	2.7	2.4	3.3
1966	.0	2.8	2.8	7.9	2.6	5.3	4.5	4.4
1967	.0	2.9	2.9	8.3	-0.2	8.5	6.8	3.9
1968	.0	4.2	4.2	7.9	3.6	4.3	4.3	3.3
1969	.0	5.4	5.4	7.7	2.0	5.0	5.1	4.4
1970	+3.2	5.9	1.7	8.5	1.2	7.3	5.6	4.7
1971	+3.3	4.3	1.0	7.8	3.1	4.7	3.6	3.1
1972	+1.9	3.3	1.4	7.9	2.8	5.1	4.0	5.0
1973	-1.3	6.2	7.5	9.8	2.1	7.7	7.6	9.1
1974	+2.2	11.0	8.8	14.3	-0.8	15.1	13.2	15.3
1975	-4.1	9.1	13.2	17.1	-0.6	17.7	16.4	10.7
1976	+3.2	5.5	2.3	10.2	3.2	7.0	5.6	9.7
1977	-7.3	6.5	13.8	7.8	.8	7.0	9.0	6.9
f 1978	-6.8	7.5	14.3	6.5	.2	6.3	8.7	7.0
f 1978-1985	.96	6.0	5.0	7.7	2.0	5.7	5.5	5.5
f 1985-1990	.0	5.0	5.0	7.0	2.0	5.0	5.0	5.0

a Total industries excluding construction.

f Forecast Assumptions: 1978-85 - The Canadian dollar rises from an average $.88 U.S. in 1978 to $.93 U.S. by 1985.
1985-90 - The Canadian dollar stabilizes at $.93 U.S.

Note: Since in the long run inflation is a purely monetary phenomenon, this inflation projection is consistent with a 7.3 per cent annum M1 growth 1978 to 1985, and an 6.4 per cent annual growth 1985 to 1990.

Source The historical statistics were taken from the Department of Finance, Economic Review, 1978. The projections are based on a series of assumptions set out in the text.

Table 9
The Money Supply Counterpart of the Inflation Forecast, Average Annual Rates of Change, 1967-1977 and 1978-1990

	(1) GNP price index	(2) Money supply (M1)	(3) Income velocity of money	(4) Real GNP
1967-1977	7.2	9.5	2.5	4.7
1978(e)	7.0	7.0	3.7	3.5
1978-85(f)	5.5	7.3	2.5	4.3
1985-90(f)	5.0	6.4	2.5	3.6

Note: The dynamic equation of exchange holds that the rate of change in inflation equals the combined rates of change in the money supply plus income velocity of money less the rate of change in real output. That is, (1) = (2) + (3) - (4). Income velocity of money is the ratio of GNP to money supply.

e Estimated

f Forecast

Source See Table 8. The assumptions used on the forecast are explained in the text.

Table 10
Aggregate Projections for Productivity, Labour Force, Real and Nominal GNP, Average Annual Rates of Growth, 1970-1978 and 1978-1995

	Labour force	Worker productivity	Real GNP	GNP price deflator	Nominal GNP
1970-1978(e)	3.8	1.5	4.6	8.3	13.3
1978-1985(f)	2.0	2.3	4.3	5.5	10.0
1985-1990(f)	1.6	2.0	3.6	5.0	8.9
1990-1995(f)	1.1	2.0	3.1	4.0	7.2

Notes: The growth rate of GNP is approximately equal to the sum of the growth rates of the labour force and aggregate productivity. The labour force projections, taken from a Department of Finance study, assume net immigration into Canada at 100,000 persons per year.

e Estimated

f Forecast

Source The assumptions used in this forecast are constrained to generate a profile of real GNP growth consistent with the forecasts presented in Tables 8 and 9.

5. A REVIEW OF A SERIES OF AGGREGATE ECONOMIC FORECASTS: THE 1980s

a) The Economic Council of Canada's 12th Annual Review

The 12th Annual Review of the Economic Council of Canada, which was published in 1975, set out a series of ten-year projections for the growth in the economy and its major components. The Council's case A projections are reported here.

According to the Council, real (non-housing) capital investment will prove to be the strongest growth sector over the entire period to 1985, averaging a 5.9 per cent annual rate of growth. Real consumer spending will advance at about a 5 per cent rate, while investment in housing will seriously lag the rest of the economy. The Council predicted that real GNP would increase at an average annual growth rate of 4.6 per cent over the period 1975 to 1985. The Council also expected a significantly lower rate of growth for the real economy between 1980 and 1985 as compared to the 1975 to 1980 period (see Tables 11 to 17).

b) The Economic Council of Canada's 14th Annual Review

In its 14th Annual Review, the Economic Council of Canada produced a scenario for the 1977 through 1982 period. Based on a series of assumptions incorporated into the Council's macro-economic model, the

projections reveal that the outlook for the next five years is not very promising. The Council projected a modest export-led recovery in 1978 and 1979, but at the same time the growth in GNP would gradually slow to about 4 per cent by 1982. In the scenario, moderate economic growth results in relatively high unemployment rates above 8 per cent throughout the period. The Consumer Price Index is projected to increase at an annual rate in excess of 6 per cent until 1982, reflecting anticipated high inflation rates in other countries and continued pressures on domestic prices. In the projection, the assumption of a U.S. exchange rate value for the Canadian dollar of $.93 was incorporated (see Tables 11 to 17).

c) The Department of Finance Medium-Term Projection: 1978-1981

The Department of Finance set out in its projection what it believed to be the likely recovery path for the Canadian economy over the short term. In the four-year projection, the Department noted that it expects real gross national product to expand at a 5.5 per cent average rate from 1978 to 1981. This rate of growth would reduce the unemployment rate to 5 per cent and the rate of inflation to 3.5 per cent by 1981. The average unemployment rate and the average rate of inflation would, of course, be higher during the four-year interval.

The assumptions about the global economy used in the projection are crucial because of Canada's open economy and dependence upon export sales. Between 1978 and 1981, the Department of Finance assumed that the industrial world would enjoy a moderate but steady recovery. Real GNP in the United States would advance at a 4.3 per cent average annual rate over this period, while Western Europe would have a 4 per cent growth rate, and Japan a 6 per cent rate. U.S. wholesale prices were predicted to rise at a 5.4 per cent average, and world oil prices would rise at a similar 5.5 per cent annual rate. A moderate recovery in commodity prices was assumed and the Canadian dollar would average about $.93 U.S. in foreign exchange markets during the four-year period.

An important part of the forecast was the continuation of the projected slow-down in money wages and unit labour costs, which provided an important boost for corporate profits in this scenario. In terms of the components of growth, the Department of Finance expects fairly rapid growth in non-residential business investment and exports to lead the recovery. A continuation of the trend of slow growth in government spending is projected and the Department believes that if inflation slows to the degree that they have projected, this will cause a decline in the personal savings rate to 8 per cent by 1981 from its 10.5 per cent average between 1974 and 1976. In essence, the scenario projected by the Department of Finance is too optimistic on both the production and price sides, and hence it is probably too optimistic for employment and labour productivity trends.

d) The Ontario Economic Council Projection

The Ontario Economic Council study, which was published in 1977, was a fairly comprehensive review of the outlook for the Canadian and Ontario economies. The basic assumptions made were that the recovery from the 1975 recession would be slow, and that withdrawal from the controls program in 1978 would be orderly and not followed by a post-controls acceleration of price inflation. The OEC also accepted the high-price scenario for domestic energy prices which was originally set out in the EMR Strategy Document.

Under the assumption of a slow recovery from the recessionary conditions of 1975, real GNP was projected to increase at an average annual rate of 5 per cent between 1978 and 1982. After the energy investment boom peaks around 1982, real GNP growth rates are expected to decline to an average annual rate of 4 per cent for the five years to 1987. A continuously declining rate of increase in the gross national product deflator from an 8.1 per cent average annual rate of increase in 1975 to a 4.7 per cent annual rate between 1978 and 1982 and 4.4 per cent annual rate from 1982 to 1987 was also projected. The national unemployment rate gradually declines in the OEC scenario, from an average of 7.7 per cent between 1978 and 1982 to a 6.1 per cent unemployment rate average for the period 1983 through 1987.

Real GNP growth is seen to be decelerating from the late 1970s through to the late 1980s. The sources of this deceleration are weaknesses in capital investment and government expenditures. For example, total investment in business fixed capital expands at a rapid pace between 1978 and 1982 (7.5 per cent per annum) and declines sharply to a rate of 2.4 per cent per annum between 1983 and 1987.

Table 11
Alternative Economic Projections for the Medium Term, (Average Annual Growth Rates), Various Periods 1975-1987

(1) Economic Council of Canada - 12th Annual Review (Projection A)

	1975-1980	1980-1985	1975-1985
		(Per cent)	
Real GNP	5.7	3.6	4.6
Nominal GNP	12.2	9.8	11.0
GNP Deflator	7.1	5.9	6.1
Consumer Price Index	7.0	5.2	6.2

(2) Economic Council of Canada - 14th Annual Review (Reference Solution)

	1977-1982
	(Per cent)
Real GNP	4.3
Consumer Price Index	7.1
Unemployment Rate	8.2
U.S. Exchange Rate of Canadian Dollar	$ .93

(3) Department of Finance, February, 1978

	1978-1981
	(Per cent)
Real GNP	5.5
"Prices"	4.7
Average Wages	6.8
Real Wages	2.0
Labour Productivity	2.6
Employment	2.8
Labour Force	2.2

(4) D. Foot, et al., Ontario Economic Council

	1978-1982	1983-1987
	(Per cent)	
Real GNP	5.0	4.0
Nominal GNP	9.9	8.6
GNP Deflator	4.7	4.4
Labour Force	2.4	2.0

Sources

(1) Economic Council of Canada, 12th Annual Review, Projection A, 1975, pp. 146-147.

(2) Economic Council of Canada, 14th Annual Review, Reference Solution, 1977, p. 70

(3) Department of Finance, Canada's Economy - Medium-Term Projections and Targets.

(4) D. Foot, et al., The Ontario Economy 1977-1987, Ontario Economic Council, 1977.

Table 12
Alternative Economic Projections for the Medium Term - Real Consumer Spending, (Average Annual Rates of Change)

Economic Council of Canada, 12th Annual Review (Projection A)
5.6 per cent (1975-1980)
4.4 per cent (1980-1985)
5.0 per cent (1975-1985)

Economic Council of Canada, 14th Annual Review (Reference Solution)
3.9 per cent (1977-1982)

Department of Finance, February, 1978
5.4 per cent (1978-1981)

D. Foot, et al., Ontario Economic Council
4.1 per cent (1978-1982)
4.2 per cent (1983-1987)

Source See Table 11.

Table 13
Alternative Economic Projections for the Medium Term - Real Housing Expenditures, (Average Annual Rates of Change)

Economic Council of Canada, 12th Annual Review (Projection A)
5.5 per cent (1975-1980)
.3 per cent (1980-1985)
1.2 per cent (1975-1985)

Economic Council of Canada, 14th Annual Review (Reference Solution)
Not Available

Department of Finance, February, 1978
1.0 per cent (1978-1981)

D. Foot, et al., Ontario Economic Council
Not Available

Source See Table 11.

Table 14
Alternative Economic Projections for the Medium Term - Real Non-residential Business Investment, (Average Annual Rates of Change)

Economic Council of Canada, 12th Annual Review (Projection A)
8.5 per cent (1975-1980)
3.3 per cent (1980-1985)
5.9 per cent (1975-1985)

Economic Council of Canada, 14th Annual Review (Reference Solution)
4.4 per cent (1977-1982)

Department of Finance, February, 1978
7.4 per cent (1978-1981)

D. Foot, et al., Ontario Economic Council - "Including housing"
7.5 per cent (1978-1982)
2.4 per cent (1983-1987)

Source See Table 11.

Table 15
Alternative Economic Projections for the Medium Term - Real Exports, (Average Annual Rates of Change)

Economic Council of Canada, 12th Annual Review (Projection A)
Not Available

Economic Council of Canada, 14th Annual Review (Reference Solution)
5.7 per cent (1977-1982)

Department of Finance, February, 1978
6.4 per cent (1978-1981)

D. Foot, et al., Ontario Economic Council
5.0 per cent (1978-1982)
4.2 per cent (1983-1987)

Source See Table 11.

Table 16
Alternative Economic Projections for the Medium Term - Real Imports, (Average Annual Rates of Change)

Economic Council of Canada, 12th Annual Review (Projection A)
Not Available

Economic Council of Canada, 14th Annual Review (Reference Solution)
4.4 per cent (1977-1982)

Department of Finance, February, 1978
5.5 per cent (1978-1981)

D. Foot, et al., Ontario Economic Council
4.6 per cent (1978-1982)
4.2 per cent (1983-1987)

Source See Table 11.

Table 17
Alternative Economic Projections for the Medium Term - Real Government Expenditures, (Average Annual Rates of Change)

Economic Council of Canada, 12th Annual Review (Projection A)
Not Available

Economic Council of Canada, 14th Annual Review (Reference Solution)
4.4 per cent (1977-1982)

Department of Finance, February, 1978

Expenditures on goods and services - 3.6 per cent (1978-1981)
Expenditures on capital formation - 4.7 per cent (1978-1981)

D. Foot. et al., Ontario Economic Council
4.8 per cent (1978-1982)
5.0 per cent (1983-1987)

Source See Table 11.

6. A PROJECTION OF THE GROWTH AND COMPOSITION OF REAL AGGREGATE DEMAND: 1978-1990

In order to discuss the capital markets in the 1980s, and basically to allow the demographic factors to shape potential economic growth, one has to make some allowance for the movement of the economy to a fuller level of utilization. A reasonable assumption is that the underemployment of resources which emerged in the late 1970s will undoubtedly be

with us for several years into the 1980s. But once Canada closes that gap of resource underutilization, the demographic trends will generate the tone of growth of the economy.

As for the pattern of aggregate demand over this period, durable consumer expenditures, exports, and energy-related capital projects will spark the economy up until the mid-1980s. In the second half of the 1980s, one may assume that demographic factors will constrain the economy to its full capacity growth rate (and the demographic factors will impact primarily on the economic projections through a slower rate of growth in the labour force). Thus this report concludes that Canada's economy will grow at an average annual rate of 4.3 per cent between 1978 and 1985, and at a 3.6 per cent rate over the balance of the decade. Business investment in machinery and equipment will also be strong throughout the decade, while housing expenditures are projected to lag behind the economy. Accelerated activity in the government and consumer spending sectors other than durables which occurred during much of the 1970s cannot be expected in the 1980s.

Table 18
Projected Growth and Distribution of Real GNP (1971 Dollars) Components in Canada: 1978-1985 and 1985-1990

	Distribution		Average annual growth rate	
	1977	1985	1978-1985	1985-1990
			(Per cent)	
Personal expenditures	63.2	63.3	4.4	3.6
Durable goods	11.1	11.6	4.9	
Semi-durable goods	8.9	9.1	4.7	
Non-durable goods	18.2	17.3	3.7	
Services	25.0	25.3	4.5	
Government expenditures on goods and services	18.2	16.4	3.0	3.6
Gross fixed capital formation	22.3	22.1	4.2	4.6
Government	3.2	2.7	1.8	
Business	19.1	19.4	4.6	
Residential construction	5.0	3.6	.3	
Non-residential construction	6.3	6.6	5.0	
Machinery and equipment	7.8	9.2	6.6	
Exports	23.0	24.7	5.3	3.6
Imports	-26.8	-26.5	4.2	4.6
GNP	100.0	100.0	4.3	3.6

Source These projections were made by the authors and are consistent with the real GNP projections set out in Tables 9 and 10.

7. FINANCIAL INTERMEDIATION AND THE FLOW OF FUNDS

Canada, as a mature industrial economy, generates both a high volume of savings and a high volume of capital formation. The interplay between savings and investment can be framed analytically in terms of a flow of funds accounting statement.

Flow of funds figures provide a means for tracing the movements of funds from the ultimate savers in the economy towards the ultimate spending sectors. Indeed, the statistics set out in Table 19 highlight the flow of savings and the net lending or borrowing positions of thirteen major sectors in the Canadian economy in 1967 and 1977. Though it is not evident in these figures, the thirteen designated sectors both save and spend, but what this study is primarily interested in is their net position.

First, let us consider the savings decision. In 1977, gross savings in Canada for these thirteen sectors amounted to $48.9 billion, representing 23.3 per cent of Canada's GNP. Ten years earlier, the ratio of savings to gross national product was 23.9 per cent. Since savings ultimately finance investment, the ratio of gross fixed capital formation to GNP (which includes in the numerator government investment, housing investment, and business investment in plant and machinery) is identical to the gross savings-GNP ratio.

The figures in Table 19 indicate that the principal saving sectors are the personal (including unincorporated business) and non-financial business sectors which between them contributed over 80 per cent of the flow of savings in 1977. In 1977, unlike 1967, the federal government provided negative savings, while provincial and local governments and hospitals provided a significant proportion of savings in both 1977 and 1967 (11.4 per cent and 11.7 per cent respectively). Even though the contribution of many of the remaining groups to gross savings is relatively small, their role is important in the transfer of funds from the surplus (or net lending) sectors to the deficit (or net borrowing) sectors of the economy. Indeed, these transfers of funds occur not only to finance capital investment, but as well to finance consumer spending and government deficits.

The remaining sectors are the financial intermediaries whose role it is to facilitate the flow of funds between the ultimate borrowing groups and the ultimate lending groups. This intermediary role, the creation of assets and liabilities with little or no gross saving, represents the important role intermediaries take on. It is somewhat difficult to classify the social security system in the same way as the other sectors since it has features which are common both to ultimate lenders as well as to a financial institution which holds personal savings and invests the funds.

The transfer of funds implicit in the financing of government spending and consumer spending is performed within the capital market, which in fact is not a single homogeneous market, but encompasses a number of interrelated financial markets. Thus in this section of the study we consider the bond market, the equity market, and the mortgage market, since in each of these markets various financial assets and liabilites are traded.

The transfer process involves the creation of legal documents which set out the terms of the transfer. These documents become the financial instruments and claims that are traded in the capital market. A typical capital market transaction involves the exchange of money (a key financial asset) for other kinds of assets such as common stocks, preferred stocks, bonds, mortgages, debentures, short-term notes, and deposit certificates. The borrower creates one or more of these types of claims as a liability against itself and then sells it to a lender.

Turning to the figures in Table 20, one observes that the net increase in total financial assets in 1977 was $95.6 billion, or nearly twice as large as the dollar volume of domestic savings, and almost four times as large as the value of net lending. The private financial institutions (banks, near banks, insurance companies, pension funds, and sales finance and consumer loan companies), accounted for one-third of the net increase in financial assets. But the role of private institutions is much greater than this since the liabilities they create constitute a significant proportion of the financial assets obtained by other sectors.

The role of term conversion by the financial institutions is crucial in facilitating the transfer of funds. Savers (or the suppliers of funds) often prefer to purchase financial claims which are short-term, liquid, and offer a low degree of risk. Borrowers, on the other hand, tend to prefer to issue long-term debt, such as mortgages and bonds. The differences in the maturity term requirements of the borrowers and lenders are bridged by the financial intermediaries. The bulk of the liabilities of the intermediaries is short-term, such as deposits and term certificates at the banks and trust companies; whereas a large proportion of the assets of these institutions is long-term, such as business loans, mortgages, and bonds.

The financial institutions profit from their intermediary role because they are able to obtain funds from savers at a lower rate than direct lenders, by offering them a less risky and more liquid security. Institutions are able to borrow on favourable terms and invest the funds by pooling them so as to diversify the risk. Moreover, intermediaries often specialize in the direction of certain industries or asset-liability categories. Thus the role of financial institutions is not restricted to the matching of terms and yields between the ultimate savers and borrowers.

As the process of financial intermediation has matured in Canada, each new institution that has evolved has provided a specialized service to meet the needs of a specific market. For example, through their borrowing and lending activities, chartered banks have provided a medium of exchange to facilitate the growth of domestic trade and other commercial ventures; life insurance companies have offered financial protection as their major service; mortgage loan companies have organized to meet the rapidly developing demand for long-term credit required for the purchase of houses and small businesses; credit unions and caisses populaires populaires have been created to provide satisfactory borrowing and savings facilities for low income individuals; and sales finance and consumer loan companies have entered into the consumer loan market to bridge the gap between credit unions and banks.

It has only been in the post-war period, and especially since the early 1960s, that vigorous competition has grown among the various types of financial institutions. This direct competition has manifested itself in a sharp increase in the number of financial instruments available to savers (such as trust company certificates and certificates of deposit), a narrowing in the gap between the return on assets and the cost of liabilities for these institutions, and a greater degree of sensitivity of interest yields on thrift instruments in response to general market changes.

The increased competition after 1967, together with the possibility of a new environment after 1979 or 1980, ironically will result in less specialization in the future. The specialty shop nature of financial institutions will continue to give way more rapidly to the department store type of institution. Indeed, the pace of this development during the 1980s and the 1990s is expected to increase sharply.

A detailed review of the personal sector (an ultimate lender) and the principal financial intermediaries including pension funds and social security funds is provided in Tables 21 to 27. The personal sector, including unincorporated business, was a net lender in 1977 in the amount of $10.4 billion. More specifically, its net increase in financial assets was in excess of its net increase of liabilities by the $10.4 billion figure. The bulk of the increase in personal assets was in bank deposits, mortgages, bonds, life insurance, and pensions. Mortgage debt represented nearly 70 per cent of the increase in personal liabilities in 1977, with consumer debt and various other loans accounting for the rest of the liability increases for the personal sector (see Table 21).

It was noted earlier that non-financial corporations are a principal borrowing sector in the economy. This business sector increases its liabilities by the issuance of equity, bonds or via direct borrowing. The business sector expands its financial assets mainly through increases in the volume of trade credit and claims on associated enterprises or firms (see Table 22).

Another principal borrowing group in 1977 was the federal government. Its liabilities increased through the issuance of government bonds (including Canada Savings Bonds) and shorter-term treasury bills. The federal government increased its asset holdings, principally through its deposits at the chartered banks and at the Bank of Canada, and via loans to the private sector (see Table 23).

Banks, near-banks, insurance companies, and private pension funds largely play an intermediary role, since their combined net loans (or borrowings) are small in absolute terms. Institutional practices, as well as the legal and regulatory framework in Canada, determine their mix of assets and liabilities. The principal liability items for the chartered banks and the near-banks are deposits. The principal assets of the banking and near-banking sectors are consumer loans, mortgages, bonds, and stocks. Included under the umbrella definition of near-banks are the Quebec Savings Banks, credit unions and caisses populaires, trust companies, and mortgage loan companies. Insurance companies and pension funds include life insurance companies, fraternal benefit societies, and trusteed pension funds (see Tables 24 and 25).

The life insurance companies and the trusteed pension funds were net borrowers in 1977. Their principal liabilities were pension-related liability payments and life insurance. Their assets are distributed primarily towards Canadian holdings of mortgages, bonds, and stocks. Trusteed pension fund assets totalled $24.7 billion (at market value) in 1976. Private pension funds held 46.4 per cent of their assets in bonds, 24.7 per cent of their assets in stocks, and 3.5 per cent of their assets in mortgages in 1976 (see Tables 26 and 28).

Lastly, the figures in Table 27 deal with Canada's social security system. It should be noted that these figures relate basically to changes in assets and liabilities. Thus the figures refer to CPP and QPP, even though, in fact, Canada's social security system includes OAS and GIS as well. The social security system has been a net lender since its inception, and net lending in 1977 amounted to $2.2 billion. Most of the funds were invested in provincial government bonds ($1.6 billion), while $608 million were loaned to associated government enterprises.

Mortgage finance increased in total value by $16.9 billion in 1977 over 1976 levels, as banks, life insurance companies, near-banks, and the trusteed pension funds took up the bulk of new mortgage finance (see Table 29). In 1977, $18.7 billion worth of new bonds were issued, of which over $14 billion were federal, provincial, and municipal bonds. Bonds were sold to the major financial intermediaries, the rest of the world, and the personal sector in 1977. But a key point to note is that the federal social security plan purchased $1.6 billion in provincial government debt in 1977. Indeed, the social security system stood second only to the external sector in terms of provincial government bond financing in that year.

Canada's outstanding consumer credit balances reached $32.4 billion by the middle of 1978, with chartered banks supplying the bulk of these funds. Indeed, the 1967 Bank Act provided the Canadian chartered banks with significant flexibility in the personal lending area, and the bank share of total consumer credit nearly doubled over the past ten years.

Table 19
Summary of Financial Flows: 1967 and 1977 (Millions of Dollars)

Major sector	1977 Gross savings (Millions)	1977 Gross savings Per cent distribution	1977 Net lending or borrowing	1967 Gross savings (Millions)	1967 Gross savings Per cent	1967 Net lending or borrowing
			(Millions)			
Persons and unincorporated business	21,772	44.5	10,390	5,115	32.3	1,959
Non-financial corporations	17,906	36.6	-2,823	5,991	37.8	-1,057
Non-financial government enterprises	1,910	3.9	-5,861	683	4.3	-1,592
Monetary authority	2	.0	- 5	1	.0	- 1
Chartered banks	683	1.4	491	117	.7	72
Near-banks	180	3.7	46	33	.2	1
Insurance companies and pension funds	36	.0	- 74	14	.1	- 38
Other private financial institutions	566	1.2	502	112	0.7	117
Federal government	-6,187	-12.6	-7,443	380	2.4	- 84
Provincial and local governments and hospitals	5,567	11.4	- 557	1,863	11.7	- 827
Social security funds	2,258	4.6	2,258	887	5.6	887
Rest of world	4,580	9.4	4,150	615	3.9	487
Other(a)	- 334	- .7	-1,074	145	.9	76
Total	48,939	100.0		15,855	100.0	

a Other includes public financial institutions and residual error.

Source Statistics Canada, Financial Flow Accounts - First Quarter 1978, Cat. 13-002, Tables 1-4.

Table 20
Summary Statement of Financial Asset Changes: Selected Years 1962-1977 (Net Increase in Financial Assets)

Major sector	1962	1968	1973	1974	1975	1976	1977
				(Millions of dollars)			
Persons and unincorporated business	4,113	5,516	18,246	20,306	22,414	26,266	31,160
Non-financial corporations	1,912	2,900	6,366	8,994	6,559	5,610	6,911
Non-financial government enterprises	79	184	253	1,239	614	2,518	865
Monetary authority	109	580	25	1,455	372	1,611	208
Chartered banks	472	4,121	12,241	12,278	8,542	15,726	14,743
Near-banks	700	1,242	4,842	4,381	5,879	7,681	9,343
Insurance companies and pension funds	1,121	1,651	3,617	4,082	5,027	6,070	6,756
Other private financial institutions	658	1,546	2,098	3,820	2,670	4,414	4,384
Federal government	406	1,650	530	5,895	1,298	1,545	1,757
Provincial and local governments and hospitals	506	1,466	1,423	3,565	3,834	2,368	5,919
Social security funds		1,003	1,472	1,775	1,999	2,183	2,258
Rest of world	1,007	1,952	4,755	3,173	5,964	12,509	8,361
Other(a)						2,807	2,863
Total	11,332	24,745	57,698	73,320	67,885	91,308	95,528

a Other includes public financial institutions.

Source Statistics Canada, Financial Flow Accounts - First Quarter 1978, Cat. 13-002, Tables 1-4, and Financial Flow Accounts, Vol. II, Cat. 13-563.

Table 21
Persons and Unincorporated Business: Changes in Selected Assets and Liabilities: 1975-1977

	1975	1976	1977
	(Millions of dollars)		
Gross saving	17,538	19,187	21,772
Capital consumption allowances	5,498	6,179	6,824
Net saving	12,040	13,638	14,948
Net lending or borrowing	9,293	8,898	10,390
Net increase in financial assets	22,128	26,266	31,160
Currency and deposits	12,468	16,246	17,712
Mortgages	217	2,347	3,634
Bonds	3,241	220	2,813
Stocks	-474	-616	-1,148
Life insurance and pensions	5,114	6,176	6,844
Net increase in liabilities	13,730	19,747	23,767
Consumer credit	3,201	3,851	3,344
Trade credit	1,188	1,496	1,827
Bank loans	830	2,523	2,034
Other loans	134	390	470
Mortgages	8,292	11,475	16,060

Source Statistics Canada, Financial Flow Accounts - First Quarter 1978, Cat. 13-002, Table 2-1.

Table 22
Non-financial Corporations: Changes in Selected Assets and Liabilities: 1975-1977

	1975	1976	1977
	(Millions of dollars)		
Gross saving	13,125	16,110	17,906
Capital consumption allowances	9,168	10,402	11,550
Net saving	3,957	5,708	6,356
Net lending or borrowing	-3,285	-4,504	-2,823
Net increase in financial assets	6,559	5,610	6,911
Currency and deposits	377	1,503	261
Trade credit	3,759	2,276	3,446
Mortgages	7	79	67
Bonds	126	-55	-20
Stocks	-29	23	25
Claims on associated enterprises	1,194	1,452	1,963
Net increase in liabilities	10,608	10,891	12,248
Trade payable	2,523	1,177	1,758
Loans	3,345	3,690	3,019
Bonds	2,112	2,132	2,079
Stocks	960	993	2,230

Source Statistics Canada, Financial Flow Accounts - First Quarter 1978, Cat. 13-002, Table 2-2.

Table 23
Federal Government: Changes in Selected Assets and Liabilities: 1975-1977

	1975	1976	1977
	(Millions of dollars)		
Gross saving	-2,677	-2,043	-6,187
Capital consumption allowances	438	499	571
Net saving	-3,115	-2,537	-6,758
Net lending or borrowing	-3,909	-3,256	-7,443
Net increase in financial assets	1,027	1,545	1,349
Currency and deposits	-752	-823	1,350
Other loans	518	385	620
Claims on associated enterprises	1,093	2,379	237
Net increase in liabilities	4,651	4,298	7,935
Treasury bills	570	1,645	2,470
Bonds	3,416	2,543	5,684

Source Statistics Canada, Financial Flow Accounts - First Quarter 1978, Cat. 13-002, Table 2-32.

Table 24
Chartered Banks: Changes in Selected Assets and Liabilities: 1975-1977

	1975	1976	1977
	(Millions of dollars)		
Gross saving	575	563	683
Capital consumption allowances	80	88	112
Net saving	495	475	571
Net lending or borrowing	389	365	491
Net increase in financial assets	8,542	15,726	14,743
Consumer credit	2,358	3,002	2,554
Other bank loans	4,872	7,094	4,921
Mortgages	1,651	1,346	2,630
Bonds	451	588	1,065
Stocks			1,623
Other assets			
Net increase in liabilities	8,221	15,437	14,238
Currency and deposits	7,771	15,050	13,899
Bonds	-8	23	18
Stocks	179	117	92

Source Statistics Canada, Financial Flow Accounts - First Quarter 1978, Cat. 13-002, Table 2-12.

Table 25
Near-Banks: Changes in Selected Assets and Liabilities, 1975-1977

	1975	1976	1977
	(Millions of dollars)		
Gross saving	126	142	180
Capital consumption allowances	13	13	13
Net saving	113	129	167
Net lending or borrowing	57	25	46
Net increase in financial assets	5,789	7,681	9,343
Consumer credit	545	742	701
Other loans	198	461	20
Mortgages	3,779	5,053	493
Bonds	450	254	223
Stocks	83	93	374
Currency and deposits	522	563	519
Net increase in liabilities	5,820	7,650	9,296
Currency and deposits	5,377	6,620	8,219
Bonds	128	337	209
Stocks	128	151	197
Loans	12	115	298

Source Statistics Canada, Financial Flow Accounts - First Quarter 1978, Cat. 13-002, Table 2-13.

Table 26
Insurance Companies and Pension Funds: Changes in Selected Assets and Liabilities: 1975-1977

	1975	1976	1977
	(Millions of dollars)		
Gross saving	32	35	36
Capital consumption allowances	23	23	24
Net saving	9	12	12
Net lending or borrowing	-93	-130	-74
Net increase in financial assets	5,043	6,070	6,756
Mortgages	1,308	1,718	2,035
Bonds	2,656	2,678	3,112
Stocks	655	964	506
Foreign investments	150	185	53
Net increase in liabilities	5,136	5,200	6,830
Life insurance and pensions	5,136	5,200	6,830

Source Statistics Canada, Financial Flow Accounts - First Quarter 1978, Cat. 13-002, Table 2-8.

Table 27
Social Security Funds: Changes in Selected Assets and Liabilities: 1975-1977

	1975	1976	1977
	(Millions of dollars)		
Total social security funds			
Gross saving	2,003	2,183	2,258
Net saving	2,003	2,183	2,258
Net lending or borrowing	2,003	2,183	2,258
Net financial investment	2,003	2,183	2,258
Net increase in financial assets	2,003	2,183	2,258
Bonds	1,400	1,519	1,654
Government of Canada bonds	10	11	11
Provincial Government bonds	1,390	1,508	1,643
Claims on associated enterprises:			
Government	582	643	630
Other financial assets	21	21	-26
Federal social security funds			
Gross saving	1,473	1,562	1,675
Net saving	1,473	1,562	1,675
Net lending or borrowing	1,473	1,562	1,675
Net financial investment	1,473	1,562	1,675
Net increase in financial assets	1,473	1,562	1,675
Bonds	1,400	1,519	1,654
Government of Canada bonds	10	11	11
Provincial Government bonds	1,390	1,508	1,643
Claims on associated enterprises:			
Government	73	42	22
Other financial assets		1	-1
Provincial social security funds			
Gross saving	530	621	583
Net saving	530	621	583
Net lending or borrowing	530	621	583
Net financial investment	530	621	583
Net increase in financial assets	530	621	583
Claims on associated enterprises:			
Government	509	601	608
Other financial assets	21	20	-25

Source Statistics Canada, Financial Flow Accounts - First Quarter 1978, Cat. 13-002, Table 2-37.

Table 28
Asset Distribution of Trusteed Pension Funds, Selected Years 1961-1976 (Market Values)

	1961		1965		1970		1976	
	Millions of dollars	Per cent	Millions of dollars	Per cent	Millions of dollars	Per cent	Millions of dollars	Per cent
Investment in pooled pension funds	135	3.3	456	6.8	767	7.3	1,463	6.0
Investment in mutual funds	41	1.0	40	.6	65	.6	37	.1
Investment in segregated funds	-	-	-	-	-	-	346	1.4
Bonds: Government of Canada	560	13.7	473	7.0	407	3.9	612	2.5
Provincial government	1,270	31.1	1,963	29.2	2,747	26.0	6,223	25.2
Municipal school boards, etc.	419	10.3	619	9.2	641	6.1	873	3.5
Other Canadian	647	15.8	965	14.4	1,349	12.8	3,742	15.2
Non-Canadian	9	.2	4	.1	10	.1	9	-
Total	2,905	71.1	4,024	59.9	5,154	48.9	11,469	46.4
Stocks: Canadian, common	445	10.9	1,042	15.5	2,223	21.0	5,103	20.6
Canadian, preferred	17	.4	29	.5	67	.6	70	.3
Non-Canadian, common	67	1.7	223	3.3	541	5.1	932	3.8
Non-Canadian, preferred	-	-	1	-	9	.1	1	-
Total	529	13.0	1,295	19.3	2,840	26.8	6,106	24.7
Mortgages: Insured residential (NHA)	231	5.6	367	5.5	512	4.8	1,944	7.9
Conventional	110	2.7	252	3.7	496	4.7	1,384	5.6
Total	341	8.3	619	9.2	1,008	9.5	3,328	13.5
Real estate and lease-backs	33	.8	44	.6	48	.5	144	.6
Miscellaneous: Cash on hand	42	1.0	103	1.5	136	1.3	398	1.6
Guaranteed investment certificates	-	-	18	.3	110	1.0	173	.7
Short-term investments	-	-	32	.5	278	2.6	790	3.2
Accrued interest and dividends receivable	36	.9	55	.8	90	.8	225	.9
Accounts receivable	21	.5	32	.5	75	.7	232	.9
Other assets	2	.1	2	-	3	-	5	-
Total	101	2.5	242	3.6	692	6.4	1,823	7.3
Total Assets	4,085	100.0	6,720	100.0	10,574	100.0	24,716	100.0

Source Statistics Canada, Trusteed Pension Plans Financial Statistics, 1977 (74-201).

Table 29
Financing the Mortgage Market in 1977

	Millions of dollars	Per cent Distribution
Total change in liabilities	16,899	
Persons and unincorporated business	16,060	
Non-financial private corporations	649	
Sources of financing		
Persons and unincorporated business	3,634	21.5
Chartered banks	2,630	15.6
Near banks	6,503	38.5
Life insurance companies	1,197	7.1
Trusteed pension plans	829	4.9
Other	2,106	12.5

Source: Statistics Canada, Financial Flow Accounts, First Quarter 1978, Cat. 13-002.

Table 30
Financing the Bond Market in 1977

	Total bonds		Federal government bonds		Provincial government bonds		Municipal bonds	
	(Millions)	(Per cent)	(Millions)	(Per cent)	(Millions)	(Per cent)	(Millions)	(Per cent)
Total change in liabilities	$18,739		$5,751		$7,571		$1,505	
Non-financial private corporations	2,079							
Non-financial government enterprises	3,505							
Federal government	5,664							
Provinces, local governments, and hospitals	5,756							
Total change in assets - major groups	18,379		5,751		7,571		1,505	
Persons and unincorporated business	2,813	(15.3)	2,334	(40.6)	466	(6.1)	321	(21.3)
Non-financial government enterprise	86	(.5)	-20	(-.3)	86	(1.1)	10	(.1)
Banks and near-banks	1,558	(8.5)	428	(7.5)	-67	(-.1)	42	(2.8)
Insurance companies and pension funds	3,112	(16.9)	578	(10.1)	1,388	(18.3)	163	(10.8)
Other private institutions	740	(4.0)	337	(5.9)	93	(1.2)	100	(6.6)
Public financial institutions	647	(3.5)	158	(2.7)	359	(4.7)	50	(3.3)
Provinces, local governments, and hospitals	1,759	(9.6)	105	(1.8)	937	(1.2)	577	(38.3)
Federal social security	1,654	(9.0)	11	(.0)	1,643	(21.7)		
Rest of world	4,895	(26.6)	306	(5.3)	2,659	(35.1)	258	(17.1)

Note: The figures in brackets represent the proportion of bond financing contributed by the various sectors.

Source Statistics Canada, Financial Flow Accounts, First Quarter 1978, Cat. 13-002.

Table 31
Stock of Consumer Credit by Selected Institutions: 1967-1978

End of period	Chartered banks (ordinary personal loans)	Sales finance and consumer loan companies	Life insurance companies (policy loans)	Quebec savings bank	Retail dealers	Trust and mortgage loan companies	Credit unions and caisses populaires	Retail dealers	Total
				(Millions of dollars)					
1967	2,980	2,408	486	17	777		1,094	834	8,595
1968	3,673	2,638	553	21	801		1,247	902	9,834
1969	4,157	3,046	660	24	857		1,401	966	11,110
1970	4,663	2,851	759	22	868		1,493	1,024	11,680
1971	5,777	2,367	784	25	914		1,690	1,086	12,643
1972	7,144	2,646	813	30	992	46	2,000	1,185	14,856
1973	8,878	2,913	884	36	1,144	82	2,420	1,288	17,644
1974	10,817	2,966	1,066	44	1,314	145	2,762	1,411	20,525
1975	13,175	2,912	1,149	58	1,424	199	3,243	1,627	23,787
1976	16,177	2,869	1,232	72	1,505	287	3,884	1,712	27,738
1977	18,731	2,754	1,282	87	1,567	368	4,512	1,862	31,163
1978(Sept.)	21,287	2,793	1,321	102	1,456	589	5,050(a)	1,758(a)	33,424(a)

a Second quarter, 1978 balances. The 1978 total added together some figures reported for September with figures reported for the second quarter of 1978.

Source Bank of Canada, Monthly Review, February 1979.

Table 32
Relative Distribution of Consumer Credit Balances by Major Holders - End of Period: Selected Years 1967-1978

	1967	1970	1973	1978
		(Per cent)		
Chartered banks	34.7	39.9	50.3	63.7
Sales finance and consumer loan companies	28.0	24.4	16.5	8.3
Life insurance companies	5.6	6.5	5.0	3.9
Quebec savings banks	2.0	.2	.2	.3
Retail dealers	9.0	7.4	6.5	4.4
Trust and mortgage loan companies			.5	1.8
Credit unions and caisse populaires	12.7	12.8	13.7	15.1
Retail dealers	9.7	8.8	7.3	5.2

Source Bank of Canada, Monthly Review, February, 1979.

8. THE DISTRIBUTION OF TOTAL FINANCIAL ASSETS: 1967-1977

The figures set out in the preceding section refer to changes in the stocks of assets and liabilities for the thirteen principal sectors of the economy. The same Statistics Canada sources compile statistics on year-end asset holdings for the major sectors, thus providing another reference point for the growth of financial institutions, and for the change in the liability and asset positions of the principal lenders and borrowers. The latest flow of fund figures available on the stock of assets were for calendar year 1976, though we were able to update the figures on the basis of more recent flow of funds data.

According to the figures in Table 33 the stock of total financial assets at the end of 1977 totalled $898.9 billion. The private financial intermediaries - the banks, near-banks, insurance companies, pension funds, mortgage companies, etc., - held about $273 billion in assets, the social security fund about $17.2 billion in assets, while the external sector held about $104 billion in assets. As Statistics Canada notes, the compilation of these aggregate and sector asset figures is derived mainly from book valuation estimates, even though market valuation provides a superior measure.

As the data in Table 34 suggest, the growth in the aggregate of total financial assets has been remarkably similar to that of Canada's nominal GNP since 1961. But there have been some striking differences in growth rates for various sectors. The assets of social security funds, banks, near-banks, and non-financial government enterprises have recorded growth rates in excess of Canada's nominal GNP.

At this point it is important to consider the issue of whether or not there should be a consistent relationship between the growth of total financial assets and the growth of Canada's GNP. Indeed, what an

empirical elasticity of unity seems to imply is that the financial intermediation process has been relatively constant, though underlying shifts have occurred among financial sectors. While there is no theoretical formulation for explaining this apparent constant relationship - that is, that total financial intermediation should remain constant - the observation forms a necessary starting point for the projections which are made in this study. The historical elasticity figures which are recorded in Table 34 for the total financial system, and for the major sectors, simply relate the percentage change in a group's assets to the percentage change in nominal GNP. The year 1967 was chosen as a starting point for the comparisons, since that year ushered in a significant change in the Canadian Bank Act which had major implications for financial asset competition among the financial institutions.

The data in Table 35 set out the Canadian dollar assets of the principal financial institutions in Canada. The chartered banks, of course, loom large in this review of financial intermediation, since their Canadian dollar assets account for about 46 per cent of total financial institution assets. Under the umbrella of the Bank Act, expected to be passed in 1980, the banks and near-banks are expected to grow more similar in their asset and liability mix, as the department store concept for financial institutions is expected to dominate in the future. In essence, the new Bank Act will further break down the specialization barriers that exist among institutions which accept deposits.

The figures in Table 36 also reveal a close correspondence between the growth of the Canadian dollar assets of financial institutions and the growth of Canada's GNP. Thus, between 1967 and 1978, Canada's nominal GNP rose at an average annual rate of 12.1 per cent, while the collection of financial assets increased at a rate of 13.1 per cent. But the distribution of private financial assets between 1967 and 1978 has shifted in favour of the banks and near-banks and away from the contractual savings sector of the economy and the sales finance and consumer loan companies. This shift in distribution of private financial assets can be detected in the figures in Table 36.

Between 1967 and 1978, banks and near-banks (with the exception of Quebec Savings Banks) grew more rapidly than the financial system as a whole, and thus increased their share of total financial assets rather dramatically. For example, the banks' share rose by 6 percentage points, trust and mortgage loan companies 1.75 percentage points, and credit unions and caisses populaires 2.7 percentage points. On the other hand, the life insurance companies, sales finance companies, and consumer loan companies all experienced declines in their share of outstanding financial assets - though it was the life insurance companies which experienced the most dramatic relative deterioration in assets. Trusteed pension funds held 13.2 per cent of financial intermediary assets in 1978, virtually unchanged from the 1967 level.

The asset growth figures in Table 36 mask to some degree the fact that the chartered banks, which held a dominant position in 1967, greatly enhanced their business opportunities by 1978 and experienced a $96 billion rise in total Canadian dollar assets over this period (approximately 50 per cent of the total increase in financial assets). Several positive factors occurred between 1967 and the late 1970s to generate this rapid expansion of banking activity:

- an accelerated growth rate in the money supply;

- severe housing inflation and periods of strong housing demand coinciding with the 1967 Bank Act changes which allowed the banks to expand vigorously in the mortgage market; and

- a strong increase in nominal consumer spending which coincided with the new bank flexibility to manipulate deposit rates and consumer lending rates.

The near-banks (trust companies, mortgage loan companies, credit unions, etc.) also benefited from the relatively strong economy which created a buoyant housing and consumer goods market over that period. Additionally, however, the banks gained because accelerating inflation appeared to increase their competitive edge in attracting funds from the life insurance companies, sales finance companies, and consumer loan firms. Even though sales finance companies and the consumer loan companies were tuned in to the strong consumer credit demand between 1967 and 1976, the more aggressive competition from banks and credit unions contributed to their relatively slow growth of assets.

Table 33
Total Financial Assets at Year End, Selected Years 1961-1977

	1961	1967	1973	1976	1977
			(Millions of dollars)		
Persons and unincorporated business	60,923	100,480	177,735	267,907	299,067
Non-financial corporations	18,653	31,428	54,909	75,196	82,107
Non-financial government enterprises	1,389	2,274	4,099	8,090	8,955
Monetary authority	5,556	7,165	12,730	16,196	16,404
Chartered banks	14,101	27,582	64,090	101,195	115,938
Near-banks	4,409	10,760	25,699	43,975	53,318
Insurance companies and pension funds	12,532	20,837	34,773	48,986	55,742
Other private financial institutions	6,692	13,627	27,285	43,914	48,298
Federal government	11,188	16,219	27,201	35,073	36,830
Provincial and local governments and hospitals	6,096	10,295	21,195	30,096	36,015
Social security fund		1,598	9,032	14,986	17,244
Rest of world	26,831	41,301	67,624	96,001	104,362
Public financial institutions	2,256	5,907	13,826	21,717	22,950
Total	170,620	289,473	540,198	803,332	898,860

Source Statistics Canada, Financial Flow Accounts, Volume II, Cat. 13-563, November, 1977; and Financial Flow Accounts, Second Quarter, 1978.

Table 34
Relationship between Asset Growth and GNP Growth (Average Annual Growth Rate), 1961-1977

Assets major sector	Proportion of total assets			Asset growth			Elasticity (Per cent change assets/ per cent change GNP) GNP growth		
	1961	1967	1977	1961-1967	1967-1973	1967-1977	1961-1967	1967-1973	1967-1977
Persons and unincorporated business	35.7	34.7	33.3	8.70	9.97	11.52	.969	.915	.943
Non-financial corporations	10.9	10.9	9.1	9.08	9.74	10.08	1.011	.894	.826
Non-financial government enterprises	.8	.8	1.0	8.56	10.32	14.69	.953	.947	1.203
Monetary authority	3.3	2.5	1.8	4.33	10.05	8.63	.482	.922	.707
Chartered banks	8.3	9.5	12.9	11.83	15.09	15.44	1.317	1.384	1.265
Near-banks	2.6	3.7	5.9	16.03	15.61	17.35	1.785	1.432	1.421
Insurance companies and pension funds	7.3	7.2	6.2	8.84	8.91	10.34	.984	.817	.847
Other private financial institutions	3.9	4.7	5.4	12.58	12.26	13.48	1.401	1.125	1.104
Federal government	6.6	5.6	4.1	6.38	9.00	8.55	.710	.826	.700
Provincial and local governments and hospitals	3.6	3.6	4.0	9.12	12.79	13.34	1.016	1.173	1.093
Social security funds		.6	1.9		33.46	26.85		3.070	2.199
Rest of world	15.7	14.3	11.6	7.45	8.56	9.72	.830	.785	.796
Public financial institutions	1.3	2.0	2.6	2.6					
Total Assets				9.21	10.96	12.00	1.026	1.006	.983
GNP				8.98	10.90	12.21			

Source See Table 33 and Department of Finance, Economic Review, April 1979, p. 125.

Table 35
Canadian Dollar Assets of Major Private Financial Intermediaries: 1967-1978

Year end	Chartered banks	Trust and mortgage loan companies	Life insurance companies	Trusteed pension funds	Credit unions and caisses	Sales finance and consumer loan companies	Quebec savings banks	Total
				(Millions of dollars)				
1967	25,199	7,125	13,459	8,068	3,382	4,501	461	62,240
1968	28,939	7,958	14,265	8,972	3,758	4,927	571	69,390
1969	31,000	9,063	15,009	10,003	4,103	5,652	542	75,372
1970	33,616	10,342	15,673	11,059	4,570	5,502	569	81,331
1971	39,958	11,629	16,771	12,461	5,532	5,595	637	92,583
1972	46,650	13,381	18,385	14,050	7,040	6,282	709	106,497
1973	56,455	16,446	20,046	16,171	8,814	8,161	805	126,884
1974	68,506	19,185	21,656	17,600	10,315	9,521	884	147,607
1975	77,169	22,621	24,097	21,264	12,791	10,323	971	169,236
1976	88,751	27,667	26,759	25,251	15,662	11,073	1,118	196,281
1977	102,819	32,633	29,419e	29,719	19,618	11,908	1,270	227,386
1978	121,000e	37,000e	32,419e	34,400e	22,000e	12,300e	1,450e	260,569
Average annual growth rate (per cent)								
1967-77	15.1	16.4	8.1	13.9	19.2	10.2	9.6	13.8
1967-78	15.3	16.1	8.3	14.1	18.6	9.6	10.0	13.9

Source Bank of Canada, Monthly Review, various issues.
Statistics Canada, Quarterly Estimate of Trusteed Pension Funds, 3rd Quarter, 1975.
Statistics Canada, Financial Flow Accounts, 2nd Quarter, 1978.

Table 36
Growth and Distribution of Canadian Dollar Assets of Major Financial Intermediaries: 1967-1978

Financial institution	Average annual growth in assets 1967-1978	Distribution of assets 1967	1978
	(Per cent)		
Banks	15.3	40.5	46.4
Near-banks			
Trust companies and mortgage loan companies	16.1	11.4	14.2
Credit unions and caisses populaires	18.6	5.4	8.4
Quebec savings banks	10.0	.8	.6
Contractual savings			
Life insurance companies	8.3	21.6	12.4
Trusteed pension funds	14.1	13.0	13.2
Sales finance companies and consumer loan companies	9.6	7.2	4.7
Total	13.9(12.1)(a)	100.0(b)	100.0(b)

a Average annual growth rate for nominal GNP, 1967 to 1978.
b May not sum to 100.0 per cent because of rounding.

Source See Table 35.

9. CAPITAL MARKET PROJECTIONS: THE 1980s

a) Demand for Funds

The previous two sections of this report outlined the role of financial institutions in the intermediation process between savers (lenders) and investors (borrowers). As the discussion and data in section 7 demonstrated, four of the five major non-financial groups (i.e., individuals and unincorporated business, corporations, government, and the foreign sector) can be regarded as both lenders and borrowers. That is, within each of these groups there are separate borrowing and lending entities, some of which are accumulating financial assets while others are issuing financial liabilities. In this section of the report we will focus on the future borrowing requirements of these groups and the mix of financial liabilities that will be issued to support the demands.

Prior to setting out a forecast of aggregate borrowing demands and the distribution of financial liabilities, it is useful to consider the course of such financial developments since 1961. Table 37 records the dollar value of total financial liabilities (assets) for the years 1961, 1967, 1973, and 1976. In addition, the total dollar value and distribu-

tion of the principal financial liabilities of the four non-financial groups are included in this table. Two key developments stand out in the data. Over the period 1961 to 1976, consumer credit, bank loans, and mortgages have each increased as a proportion of total financial liabilities. On the other hand, the bonds' and equities' shares have declined steadily.

One additional observation on these statistics is that among bonds, the provincial share has increased not only in relation to total bond liabilities but also to total financial liabilities. These trends may directly reflect large-scale public utility investments financed by the provincial governments or indirectly rising demands for expenditures by provincial governments in the health, education, and social assistance areas. Clearly the availability of funds from the CPP/QPP eased the financial borrowing constraint on the provinces, permitting them to be more willing to meet such increasing demands.

The critical question for this study is whether these financial developments will continue in the 1980s. The answer is both yes and no. In order to demonstrate which trends will continue and which ones may reverse, it is necessary to draw upon materials presented above in sections 1 to 4 and 6 of the study. Starting with the consumer sector (individuals and unincorporated business) one notes that two critical factors have been at work. Over the past fifteen years the share of GNP accounted for by total consumer expenditures has risen only marginally, although among consumer items, expenditures on durables have increased sharply. And financing of consumer expenditures occurs most frequently for durables and semi-durable commodities. The other key factor stems from the demographic projections for the next decade. As was illustrated elsewhere, Canada can expect its population to become noticeably older in the 1980s, with the age group 30 to 49 displaying the most rapid rate of growth over the period 1978 to 1990. It is within this age group that spending on durables and semi-durables represents the largest proportion of total expenditures.

The latter demographic fact implies that the observed trend of an increasing proportion of total consumer expenditures to GNP being accounted for by spending on durables (and to a lesser extent semi-durables) is likely to continue in the 1980s. Indeed, the authors project the aggregate demand distribution for 1985 and 1990 as set out in Table 18.

In light of our expectations with regard to the growth and distribution of consumer spending to 1990, one can project a continuation of the past increases in the consumer credit share of total financial liabilities. But the upward trend will moderate somewhat because the proportion of durables and semi-durables expenditures financed externally will decline. Earlier in this study it was noted that the personal savings rate in 1978 was close to its record high attained in 1975, and with some expected moderation in the rate of inflation, the personal

savings rate may trend lower, thus providing resources to finance consumer expenditures. Consequently, we expect consumer credit outstanding to comprise about 3.7 and 3.8 per cent of total financial liabilities in 1985 and 1990 respectively. These ratios compare to a 3.4 per cent share in 1976 and 2.5 per cent in 1961 (see Table 37).

In section 3 of this study the prospects for the housing market to 1990 were reviewed. The main trends in this area indicate little if any real growth in the level of expenditures in residential construction to 1985, and negative real growth between 1985 and 1990. Indeed, the share of residential construction to total GNP should decline continually over the period 1978 to 1990 (see Table 18). The real growth trends should result in lower relative demands for mortgage funds. This forecast is based partly on the expectation that housing inflation will not outpace the overall rate of inflation, let alone exceed it by an amount sufficient to offset the real growth trends. Thus the figures in Table 37 highlight a rather sharp reversal from the past when mortgages made up an increasing share of total financial liabilities. By 1985, mortgages should acount for 8.5 per cent of aggregate financial liabilities as compared to 9.9 per cent in 1976. The ratio is expected to decline further to 8 per cent by 1990.

The attention on asset and liability distribution now shifts to the government sector. As was noted in section 1, we expect that a continuation of spending restraint by all levels of government will be a distinctive feature of the period up to at least 1985. The desire by governments to reduce their budget deficits should in itself result in future relative reductions in borrowing demands stemming from this sector. In addition, the overbuilding of electrical generating capacity in several provinces during the past decade may lead to lower real expansion in future generating facilities by provincially controlled utility companies. This should reduce as well the growth of borrowing demands from the provincial sector.

However, fiscal restraint cannot quickly eliminate large government deficits. In the absence of significant tax rate increases (such as the elimination of indexing of personal income taxes), the continuation of double-digit (in billions of dollars) or near double-digit budget deficits at the federal level are expected to continue until the early 1980s even with continued restraint on spending.

These various trends imply the following:

1. At the federal level, large deficits will continue for some time, even with a program of restraint. This will result in borrowing demands outpacing total demands until 1985, so that by 1985 the government of Canada bond share of total financial liabilities should approach 4.6 per cent. Beyond 1985, continued restraint together with a prospective fuller utilization of

the economy's potential capacity should contribute to better control of the deficit and relatively lower borrowing demands.

2. Budget deficits will be more controllable at the provincial level. The total borrowing demands of the provinces should rise at a lower rate than aggregate borrowing. Thus, the provincial bond share of total financial liabilities should decline from the 6 per cent level in 1976 to 5.5 and 5 per cent by 1985 and 1990 respectively.

3. Municipal borrowing needs will tend to parallel those of the provincial governments. This study projects a decline in the share of municipal liabilities to total liabilities.

The corporate sector is the final one which is considered in this section. In section 2 of this report it was noted that real growth in non-residential construction and machinery and equipment is expected to be fairly rapid in the 1980s, stimulated by large-scale energy projects and the modernization of facilities in the resource industries. Thus, private investment growth should exceed the real growth rate of aggregate GNP at least until 1985.

As Table 18 indicates, growth in real business investment dominates the economy through until the mid-1980s. The main factors explaining this trend are already in place - particularly the scheduled energy investment projects (see Appendix Table 1). Indeed, with the delays already experienced in this area, it is likely that the capital investment field will dominate the aggregate demand profile for the second half of the 1980s as well.

The relatively buoyant expectations for the business investment sector should translate into relatively large-scale borrowing demands. The corporate sector will raise the needed funds by issuing bonds and equities and as well by borrowing from the chartered banks. As a result, we have projected the shares of other Canadian bonds, equities, and bank loans to increase between 1978 and 1990 (see Table 37).

Table 37
Relationship of Selected Financial Assets to Total Assets, Selected Years 1961-1977 and Forecasts 1985 and 1990

	1961	1967	1973	1977
	(Millions of dollars)			
Total assets	170,620	289,473	540,198	803,332
Consumer credit	4,334	8,501	17,484	27,431
Banks loans	6,055	12,666	26,301	44,286
Mortgages	12,036	24,200	50,887	79,198
Bonds	37,225	55,377	86,524	127,826
Government of Canada	16,745	19,533	25,031	34,200
Provincial	8,179	15,031	29,267	48,245
Municipal	4,224	7,527	11,308	15,403
Other Canadian	8,077	13,286	20,918	29,978
Equities	20,000	31,504	48,523	68,358

	Selected ratios to total assets				Projections 1985	1990
	(Per cent)					
Consumer credit	2.5	2.9	3.2	3.4	3.7	3.8
Bank loans	2.5	4.4	4.9	5.5	6.0	6.0
Mortgages	7.1	8.4	9.4	9.9	8.5	8.0
Bonds	21.8	19.1	16.0	15.9	15.7	14.8
Government of Canada	9.8	6.7	4.6	4.3	4.6	4.0
Provincial	4.8	5.2	5.4	6.0	5.5	5.0
Municipal	2.5	2.6	2.1	1.9	1.7	1.5
Other Canadian	4.7	4.6	3.9	3.7	3.9	4.3
Equities	11.7	10.9	9.0	8.5	8.8	9.0

Source For the historical data, the source is Statistics Canada, Financial Flow Accounts, First Quarter 1978, Cat. 13-002, Table 1-4 and Financial Flow Accounts, Vol. II, Cat. 13-563.

b) Supply of Funds

The four major sources of funds (savings) are individuals and unincorporated business, business enterprises, government including CPP/QPP, and the foreign sector. For the first three groups there are two sources of savings - the excess of their revenues over expenditures (including taxes) and capital consumption allowances. The foreign sector is a net supplier of funds whenever the current account is in a deficit position, and during the past quarter-century this has been the case in Canada in all but two years (1971 and 1972). Generally, the foreign sector is a net supplier of long-term funds - direct and portfolio investment - and a net recipient of short-term funds (see Table 38).

Several interesting developments have occurred in the distribution of savings during the past fifteen years. The aggregate savings rate (as measured by the investment/GNP ratio which is the exact counterpart to

the gross savings/GNP ratio) has not displayed any discernible trend over this period. In current dollar terms the savings rate was about 23 per cent in 1978 as compared to just under 21 per cent in 1962 and 1963. However, the composition of aggregate savings has changed dramatically. The savings generated by persons and unincorporated business rose steadily as a proportion of total savings betwen the mid-1960s and the mid-1970s. For example, in 1965 this sector accounted for less than 29 per cent of total savings and in 1975 for just under 44 per cent. The upward trend has moderated during the past three years. The increase of this sector was entirely the result of higher savings (excess of revenues over expenditures) rather than capital consumption allowances (see Table 38). In turn, the higher personal savings contribution reflected a sharp acceleration in the personal savings rate (savings as a proportion of personal disposable income) between the early and mid-1970s, rather than an increase in the personal income-GNP and personal disposable income-personal income ratios. Indeed, the increase in the former ratio between the mid-1960s and the mid-1970s was offset by the decrease in the latter ratio over this same period (see Table 39).

Government's role as a supplier of savings has declined sharply since 1974. Capital consumption allowances in the government sector as a source of savings has remained relatively steady, providing about 6 per cent of total savings. The government savings component has changed significantly. CPP/QPP contributions to total savings have increased since the inception of these plans in the mid-1960s, although during the past few years their share has levelled off. But offsetting the CPP/QPP gains have been increasing deficits at all levels of government during the 1970s. Thus by 1977, government savings excluding capital consumption allowances have been negative.

Business savings' share of total savings has been quite volatile since 1962, fluctuating between 35 and 46 per cent. Downward inventory valuation adjustments, particularly since the mid-1960s when inflation rates began to accelerate, have been a consistent negative component of business savings. The most significant part of business savings has been capital consumption allowances (CCA). They have accounted generally for 60 per cent or more of total business savings and between 24 and 31 per cent of aggregate savings. The business CCA share of total savings has dropped sharply since 1971 so that from 1974 onwards the share has tended to be below 25 per cent. The acceleration in the inflation rate since 1973 might be partly responsible for this development. Accounting practices, especially for valuing physical capital and the appropriate depreciation write-offs, have not adjusted to a more inflationary environment. Hence, capital consumption allowances based on historical prices do not adequately reflect the much higher replacement values of the capital stock and so are serious underestimates. As inflation rates moderate and recent capital investments begin to represent a greater proportion of the existing capital stock, then part of this accounting problem will be offset. In addition, the changes in tax treatment of depreciation allowances introduced in a recent federal gov-

ernment budget should accelerate innovations in inflation accounting, as well as contribute to offsetting the recent trend.

Undistributed corporate profits have fluctuated as a share of gross savings, and the profit share has ranged between 16 and 23 per cent. Obviously, undistributed corporate profits contributions parallel the movements in profits generally. Thus it is not surprising that the profits to savings share reached 23 per cent in 1974 when corporate profits climbed to 13.5 per cent of total GNP - the highest ratio in the past quarter of a century. Corporate profits in turn are influenced by capacity utilization rates and thus the business cycle. During the early stages of an upturn, as capacity utilization rates begin rising sharply, profit margins and aggregate profits also increase significantly. During the latter stages, profit increases are moderated by rising wage gains. Similarly, during the early stages of a downturn, profits fall sharply as capacity utilization rates fall.

The foreign sector's net contribution to aggregate savings reflects the size of the current account deficit relative to GNP, since foreign sector savings are the net capital inflows that finance the current account deficit. Since 1974, the current account deficit has remained in excess of $4 billion each year, surpassing the $5 billion mark in 1978. Thus it is not surprising that the foreign sector has contributed around 10 per cent of total savings since 1975, especially since governments have been diminishing in importance as a source of savings.

The future supply of gross savings will be affected by the impact of the large devaluation of the Canadian dollar between December 1976 and December 1978 on future current account balances, the expected levelling off in the net contributions to the CPP/QPP, and governments' push towards balancing budgets. None of these factors in themselves should impinge directly on the savings contributions (of persons and unincorporated business). They will, of course, have indirect effects. For example, the devaluation of the dollar should offset the government restraint program's negative impact on the economy. Further, the absence of any significant changes in CPP/QPP contribution rates should leave the personal disposable income/personal income ratio unaffected.

Capital consumption allowances for unincorporated businesses and individuals should provide an average of between 13 and 14 per cent of total savings over the period 1978 to 1990. The net savings component should contribute between 21 and 23 per cent. These shares represent a decline from the current levels. This reflects the expectation that the personal savings rate should drop below the present 10 per cent rate and average between 7 and 8 per cent during the next decade. This decline should not be offset or exacerbated by changes in the personal income-GNP and personal disposable income-personal income rates. While the former rate increased and the latter decreased during the 1970s, these trends are not likely to continue. Indexing of personal income taxes has effectively put an end to the latter trend. As for the former, gov-

ernment restraint, especially in the area of transfer payments, should curtail the upward trend. Moreover, the moderation in inflation and interest rates should also serve to reinforce the impact of government restraint since rising interest, dividends and miscellaneous investment income, and government transfer payments were primarily responsible for the increasing share of personal income to GNP (see Table 40).

In the business sector, changes in the accounting treatment of depreciation allowances, together with rapid growth of investment in non-residential construction, machinery, and equipment should result in significantly larger contributions by capital consumption allowances to total savings. Thus, we would project a share averaging close to 28 per cent over the period 1978 to 1985 and between 30 and 32 per cent for the period 1985 to 1990.

Associated with government efforts at restraint is a desire to stimulate the private sector and to reallocate economic activity essentially in that direction. This suggests that tax policies will be favourable for corporate profits. Therefore, one would expect the undistributed profits-total savings ratio to average around 18 to 19 per cent during the next decade. In total then, the corporate sector's share of total savings, allowing for a negative 2 per cent impact for the inventory valuation adjustment (the adjustment is negative when prices are rising) should average about 44 per cent between 1975 and 1985 and 47 per cent between 1985 and 1990.

As for the foreign sector, the prospective impact of the recent Canadian dollar devaluation becomes crucial. If the devaluation does not dramatically improve Canada's cost competitive position over time (there is always the possibility that relatively lower productivity growth rates or sharply higher wage gains in Canada can erode the short-term cost advantages of a lower dollar) or if increasing natural gas sales result in a significant upward move in the international value of the Canadian dollar, then the annual current account deficit could continue to exceed $4 or $5 billion. Sharply higher deficits are also quite probable in this scenario because of the rising costs of servicing the large increases in Canada's net international debt registered since 1974. Hence, deficits in excess of $7 or $8 billion and rising further over time are not unreasonable in this scenario. Therefore, in this case we would expect the foreign sector to continue contributing around 10 per cent to total savings.

On the other hand, if the positive impact of the devaluation predominates over any negative offsets, then the current account deficit should decline both in absolute and relative terms during the next decade. In this scenario, the foreign sector's contribution to total gross savings should drop to about the 4 to 5 per cent level. In addition, the more rapid rates of economic growth that should occur as a result between 1978 and 1983, should make it somewhat easier for governments, particularly the federal government, to bring their spending more in

line with their revenues. In effect, a lower foreign sector contribution to gross savings should be compensated for by a higher government savings share.

We now focus our attention on governments' contributions to total gross savings. Despite the expectation that spending restraint will also affect investment projects by governments and/or their agencies, one can nevertheless anticipate that government capital consumption allowances will comprise between 5.5 and 6 per cent of total savings. There are two opposing factors that will affect the net savings component.

First, the contribution of CPP/QPP to total savings should remain at about 2.5 per cent until 1985. After 1985, as the CPP fund moves towards a pure pay-as-you-go system, in the absence of any policy changes that would attempt to maintain the CPP as a partly funded system, the CPP share of total savings will decline quickly towards zero prior to 1990. Secondly, the government restraint program is expected to show increasing signs of success during the early to mid-1980s. Thus, while the total net savings of government, including the CPP/QPP, should remain relatively small until 1981, thereafter some positive growth could occur. Consequently, we project that governments' share of total savings (including government CCA) should average between 8 and 11 per cent over the next decade, assuming only moderate benefits from the devaluation of the dollar.

To translate the various projections into specific savings ratio or dollar values requires an estimate of the aggregate savings-GNP ratio, and in turn a projection of the current dollar value of GNP. In section 4, we provided an estimate of the expected average annual growth rates for nominal GNP. Using the growth rates, we calculate a value for GNP of $445.2 billion in 1985 and $685.4 billion in 1990. The aggregate gross savings to GNP ratio is estimated by projecting the investment to GNP ratio, since it is the numerical counterpart. According to the discussion in the previous section, business investment in non-residential construction, machinery, and equipment should outpace the growth of aggregate GNP. However, investment in residential construction and by government should keep the aggregate growth rate for total investment in line with that for GNP, at least until 1985. Thus the investment GNP rate should display little change between 1978 and 1985.

Combining the projections of the savings-GNP ratios with projections of GNP yields the following current dollar estimates for savings: 1985 - $98.5 billion; 1990 - $150.4 billion. The projections for the various sub-components of savings and the above savings totals are combined to produce absolute dollar values for the sub-components of savings. The data are presented in Table 41.

Table 38
Selected Ratios for Savings and Capital Formation, Selected Years 1962-1976

	1962	1965	1968	1971	1974	1975	1976
	(Per cent)						
Distribution of gross savings							
1. Persons and unincorporated business: Savings	17.1	13.8	14.4	17.6	26.5	30.3	29.5
CCA	17.2	15.0	16.0	15.2	12.0	13.4	13.3
	(34.3)	(28.8)	(30.4)	(32.8)	(38.5)	(43.7)	(42.8)
2. Government: Savings	6.4	13.2	15.3	12.4	15.9	.3	.7
CCA	5.9	5.4	6.0	6.6	5.6	6.2	6.2
	(12.3)	(18.6)	(21.3)	(19.0)	(21.5)	(6.5)	(6.9)
3. Business enterprises: Undistributed profits	16.4	18.6	19.7	17.1	23.0	18.4	16.8
IVA	-1.0	-2.3	-2.1	-3.3	-11.2	-7.3	-4.4
CCA	31.0	26.4	28.4	30.0	23.9	25.1	24.8
	(46.4)	(42.7)	(46.0)	(43.8)	(35.7)	(36.2)	(37.2)
4. Non-residents	8.0	8.0	1.6	-.9	5.4	13.2	10.4
Distribution of capital formation							
1. Persons and unincorporated business: GFCF	24.0	21.3	21.8	22.1	21.2	23.3	24.6
Inventories	2.5	.2	1.4	.1	-.8	.6	1.0
	(26.5)	(21.5)	(23.2)	(22.2)	(20.4)	(23.9)	(25.6)
2. Government: GFCF	19.7	17.2	18.1	18.5	14.4	15.8	14.2
Inventories	-.0	-.1	.2	.2	.1	.1	.1
	(19.7)	(17.1)	(18.3)	(18.3)	(14.5)	(15.9)	(14.3)
3. Business enterprises: GFCF	48.1	54.3	55.6	61.9	54.6	61.1	58.4
Inventories	4.4	8.7	2.9	2.0	8.8	-1.3	3.5
	(52.5)	(63.0)	(58.5)	(63.9)	(63.4)	(59.8)	(61.9)
Personal and uncorporated business: 1. Savings + CCA/GFCF	1.42	1.35	1.39	1.48	1.82	1.88	1.74
2. Savings/Savings + CCA	49.9	48.0	47.5	53.7	68.8	69.3	68.9
Government: 1. Savings + CCA/GFCF	.63	1.08	1.18	1.02	1.50	.41	.49
2. Savings/Savings + CCA	51.9	70.9	71.9	65.3	74.0	4.0	10.4
Business: 1. Savings + CCA/GFCF	.97	.80	.84	.72	.67	.61	.65
2. Savings + CCA/GFCF + Inventories	.89	.69	.80	.70	.58	.62	.61
3. Undistributed Profits/Savings + CCA	35.0	43.0	42.2	38.2	63.2	49.7	44.2
4. Savings/Savings + CCA	33.6	38.9	39.0	33.1	34.4	32.2	34.7
5. Undistributed Profits + CCA/GFCF	.98	.83	.86	.76	.86	.71	.71

Notes: CCA - Capital Consumption Allowances
GFCF - Gross Fixed Capital Formation
IVA - Inventory Valuation Adjustment

Source Statistics Canada, National Income and Expenditure Accounts, 1962-1976, Cat. 13-201.

Table 39
Selected Personal Income Ratios, Selected Years 1962-1976

	1962	1965	1968	1971	1974	1975	1976
					(Per cent)		
Personal income/GNP	76.4	74.2	76.7	78.4	79.5	82.4	82.0
Personal direct taxes/Personal income	9.7	10.8	14.8	17.6	18.1	17.6	18.2
Other transfers/Personal income	.8	.9	1.1	1.5	1.0	.8	.9
PDI/Personal income	89.5	88.3	84.1	80.9	80.9	81.5	80.9
C/PDI	93.6	93.6	93.3	92.8	88.1	87.3	87.7
Interest on consumer debt/PDI	.5	.6	.8	1.1	1.6	1.5	1.5
S/PDI	5.6	5.5	5.6	5.8	10.1	11.0	10.6
C/GNP	64.0	61.3	60.2	58.9	56.7	58.6	58.2
Income taxes/Personal income	7.1	8.2	10.6	13.7	13.8	13.2	13.6
Contributions to insurance or pension funds (ex CPP and QPP)/Personal income contributions	2.1	2.1	2.1	2.0	2.8	2.9	3.1
CPP + QPP/Personal income	—	—	1.7	1.5	1.4	1.4	1.4
Insurance and pension contributions (ex CPP + QPP)/Savings	42.4	43.2	44.2	43.2	34.0	32.5	36.0
CPP + QPP/Savings	—	—	35.0	31.4	16.8	15.6	16.5
			(79.2)	(74.6)	(50.8)	(48.1)	(52.5)

Notes: PDI - Personal Disposable Income
C - Consumer Spending
S - Personal Savings

Source Statistics Canada, National Income and Expenditure Accounts, 1962-1976, Cat. 13-201.

Table 40
Personal Income by Selected Sources, Percentage Distribution, Selected Years 1962-1976

	1962	1965	1968	1971	1974	1975	1976
				(Per cent)			
Wages, salaries, and supplementary labour income	66.5	68.7	69.0	69.6	68.4	68.6	69.1
Interest, dividends, and miscellaneous investment income	7.6	7.9	7.7	7.6	9.4	9.0	9.5
Transfer payments from government	8.9	8.3	9.8	11.1	11.9	12.5	12.5

Source Statistics Canada, Financial Flow Accounts, First Quarter 1978, (13-002).

Table 41
Projected Flow and Distribution of Aggregate Savings by Selected Sectors: 1985 and 1990

	1985		1990	
	(Billions of dollars)	(Per cent)	(Billions of dollars)	(Per cent)
Total gross savings	98.5	100.0	150.4	100.0
Persons and unincorporated business				
- Net savings	21.7	22.0	33.0	22.0
- CCA	13.3	13.5	20.3	13.5
Business				
- Net savings	18.2	18.5	27.8	18.5
- IVA	-2.0	-2.0	-3.0	-2.0
- CCA	27.6	28.0	46.6	31.0
Government				
- Net savings, ex CPP/QPP	.0	.0	3.0	2.0
- CPP/QPP	2.5	2.5	.0	.0
- CCA	5.4	5.5	8.3	5.5
Foreign sector	6.9	7.0	7.5	5.0

Source The methodology of the forecast is explained in the text.

c) Asset Growth and Composition

In this section we focus on the expected growth to 1985 and 1990 of selected financial intermediaries - banks, near-banks, other private financial institutions and life insurance companies and pension funds - under different inflation scenarios. In addition, this section considers the relative savings roles of social security funds and the rest of the world sector. As discussed in section 7, financial institutions are intermediaries between savers (lenders) and investors (borrowers). These institutions obtain funds from savers by issuing their financial liabilities which generally tend to be short-term. They then lend the funds out by purchasing the financial liabilities of borrowers - these liabilities are generally long-term although higher rates of inflation have tended to create pressures to shorten the term of such loans. Social security funds and the rest of the world sector also play an intermediary role at least in terms of transferring funds from one group to another group. The social security funds specialize in provincial government debt, while the rest of the world sector purchases long-term private and public sector debt and equity.

In Table 42 we have set out the estimated holdings of total financial assets of the selected institutions in 1977. In Table 43 we have calculated the proportions. Thus in 1977 the banks held financial assets of $115.9 billion or 25.5 per cent of the total of $454.9 billion. Social security funds on the other hand accounted for $17.3 billion or 3.8 per cent of the total. In these tables we have also recorded the projections for 1985 and 1990. For both years there are four sets of projections.

There are high and low inflation projections. The low inflation projection is equal to our expected average annual rate of inflation less one percentage point for the respective periods 1978 to 1985 and 1985 to 1990, as reported in section 4 of the study. The high inflation projection is equal to the expected rate plus two percentage points. In addition, for each inflation projection there are two separate estimates. The column (a) estimates used the average elasticity of asset to GNP growth for the period 1968 to 1977 for each of the institutions. The values are presented in Table 42 below. The use of these values implies continued relative growth of the banks, near banks, and other private financial institutions and continued relative decline for insurance companies and pension funds and the rest of the world. The column (b) estimates used a constant elasticity of 1.0 for all the institutions. In effect, the holdings of financial assets are projected to increase at the same rate for all institutions, with the rate of growth equalling the rate of growth in nominal GNP adjusted for the low and high inflation rate assumptions. In all cases, the CPP asset projections were taken from Case C internal projections for the CPP provided by the Royal Commission on Pensions in Ontario. The QPP assets were assumed to equal the same proportion of the CPP assets as was the case in 1977 (see Tables 42 and 43).

Using all of the above assumptions, we were able to generate the remainder of the data in Tables 42 and 43. We note in Table 42 that by 1985, total financial assets of the selected financial institutions could range between $906 billion and $1,173.5 billion. In 1990, total financial assets could range between $1,318.3 and $2,045.4 billion. These figures compare with estimates for nominal GNP of $495.2 and $685.4 billion in 1985 and 1990 respectively, and for aggregate savings of $98.5 and $150.4 billion in 1985 and 1990.

An examination of the data in Table 43 reveals that the relative role of the social security funds in the financial intermediation process declines marginally to 1985 and sharply thereafter. The financial institutions move in to fill the gap and this reflects as well the declining importance of provincial government bonds as a proportion of total financial liabilities, and the corresponding relative gains of credit, bank loans, corporate bonds, and equities (see Table 37 above).

Table 42
Projection of Financial Assets of Financial Intermediaries, 1985 and 1990

	1977	1985				1990			
		Low inflation		High inflation		Low inflation		High inflation	
		(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
		(Billions of Dollars)							
Banks	115.9	274.6	230.9	359.0	287.0	440.0	336.1	681.0	479.3
Near-banks	53.3	139.6	106.2	187.8	132.0	236.1	154.6	383.5	220.4
Other private financial institutions	48.3	103.1	96.2	130.7	119.6	155.8	140.0	229.5	199.7
Insurance companies and pension funds	55.7	100.3	111.0	120.8	137.9	138.1	161.6	187.1	230.3
Social security funds	17.3	34.1	34.1	34.1	34.1	49.1	49.1	49.1	49.1
CPP(c)	12.6	25.0	25.0	25.0	25.0	36.0	36.0	36.0	36.0
QPP(d)	4.6	9.1	9.1	9.1	9.1	13.1	13.1	13.1	13.1
Rest of world	164.4	286.0	327.6	341.1	407.0	386.5	476.9	515.2	679.7
Total	454.9	937.7	906.0	1,173.5	1,117.6	1,405.6	1,318.3	2,045.4	1,858.5

Notes: (a) Calculated from the 1967-1977 average elasticity of assets to GNP. For example, the projected bank asset figure for 1985, assuring low inflation and assumption (a) in 115.9 $[1+1.265(\text{Table } 34).009]^8$

(b) Elasticity assumed 1.0.

(c) Royal Commission Projection, Case C.

(d) Assumed constant ratio to CPP.

* Projected annual GNP growth rates are as follows:

Low Inflation Scenario 1977-1985 = 9.0 per cent, 1985-1990 = 7.8 per cent
Medium Inflation Scenario 1977-1985 = 10.0 per cent, 1985-1990 = 8.8 per cent
High Inflation Scenario 1977-1985 = 12.0 per cent, 1985-1990 = 10.8 per cent.

Source Statistics Canada, Financial Flow Accounts, Vol. II, Cat. 13-563, 1962-1977.

Table 43
Distribution of Financial Assets of Financial Intermediaries, 1985 and 1990

	1977	1985				1990			
		Low Inflation		High Inflation		Low Inflation		High Inflation	
		(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
					(Per cent)				
Banks	25.5	29.3	25.5	30.6	25.7	31.3	25.5	33.3	25.8
Near-banks	11.7	14.9	11.7	16.0	11.8	16.8	11.7	18.7	11.9
Other private financial institutions	10.6	11.0	10.6	11.1	10.7	11.1	10.6	11.2	10.7
Insurance companies and pension funds	12.2	10.7	12.2	10.3	12.3	9.8	12.2	9.1	12.4
Social security funds	3.8	3.6	3.8	2.9	3.1	3.5	3.7	2.4	2.6
Rest of world	36.1	30.5	36.1	29.1	36.4	27.5	36.2	25.2	36.6

Source Statistics Canada, Financial Flow Accounts, Vol. II, Cat. 13-563, 1962-1977 and projections made by authors.

10. EXPLAINING DIFFERENCES IN SAVINGS RATES: CANADA AND THE UNITED STATES

Until the early 1970s, any differences between the United States and Canada in the manner in which savings were contributed by the various sectors of the economy were easily explainable. For example, in 1966, the proportion of total savings contributed by the personal sector was much lower in Canada than in the United States - 17.3 per cent versus 26.8 per cent (see Table 44). In the 1960s, the bulk of savings in both Canada and the United States was contributed by the business sector.

The government sector - including social security funds - was much more important in Canada than in the United States. In 1966, governments contributed about 17 per cent of total savings in Canada by running surpluses, whereas in the United States all levels of governments ran deficits which resulted in a negative contribution of U.S. governments to gross savings in 1966. But as the 1970s progressed, sharp changes occurred not only in the source of financing between Canada and the United States, but also in the personal savings rates as recorded in both countries.

First of all, the personal share of savings (excluding CCA) in Canada rose steadily in the 1970s, reaching 31.6 per cent in 1978, while the U.S. share in 1977 was actually below its 1966 level. Thus personal savings contributed more to the level of gross savings in Canada than in the United States as the decade of the 1970s closed. In Canada, government contributions to savings, which were strongly positive in the mid-1960s and even in 1973, became sharply negative thereafter. By the late 1970s, governments in both Canada and the United States were dissaving by about similar relative amounts. Finally, the Canadian personal savings rate soared in the 1970s, climbing to 10.9 per cent on two occasions (1975 and 1978), while in the United States the personal savings rate declined and remained quite low in the 1970s. The personal savings rate represents the proportion of personal disposable income which the personal sector does not spend on goods, services, or transfers.

We have contacted officials in Statistics Canada to see if there are any measurement explanations (statistical definitional reasons) which may account for the sharp upward hike in the Canadian personal savings rate in the 1970s compared to the seemingly low personal savings rate in the United States. From our conversations we are satisfied that the statistical conventions and practices applied in both countries are nearly identical. What is different between the two countries are the external factors which affect savings and spending decisions, particularly institutional arrangements and inflation experiences.

First some comments on how savings are defined and allocated by sector. In both countries, personal savings are defined to include private pension fund contributions, though they exclude employer and em-

ployee contributions to social security funds. In Canada such exclusions from personal savings include contributions for CPP, QPP, UIC, and government pensions.

Social security savings in the Canadian context are defined as the difference between total revenues for the CPP and QPP less total social security expenditures. Social security savings, according to Statistics Canada's National Accounts, have accounted for between some 26 per cent and more than 100 per cent of the amount of total government savings since 1966. In the latter part of the 1970s social security savings have been over $2 billion per annum, while in 1978 the recorded total flow of government dissavings, including the social security system, was $4.3 billion. Thus while in 1978 social security savings as a proportion of government savings were in fact in excess of 100 per cent, they represented only 4.5 per cent of total Canadian gross savings in that year.

In summary, saving by Canadian governments in the late 1970s contributed negatively to the total pool of gross savings, but government deficits would indeed have been far worse were it not for the fact that the social security system in Canada became an important source of savings for the economy.

In the United States, the statistical relationship between government savings, social security savings, and total gross savings is slightly different. In 1974, the Department of Commerce recorded a $6.1 billion surplus on the U.S. social insurance fund, while all levels of government recorded a $3.2 billion deficit. By 1977, U.S. government deficits had climbed to $18.6 billion, while the deficit on social security funds rose to $10.1 billion. Thus the U.S. social insurance fund was in deficit in 1977, while Canada's CPP fund is not projected to go into deficit until after the mid-1980s. Whether CPP contribution rates will or should rise to halt the potential fund deficits is important. In any event, if the CPP becomes a pure pay-as-you-go system - such as the Royal Commission projections for fund C (which has the fund stabilizing at $36.1 billion in 1991) - this implies that all levels of government will be recording larger deficits, and the CPP share of total gross savings will decline to about zero in the early 1990s.

Thus in both Canada and the United States all levels of government savings became negative in the second half of the 1970s because of the huge deficits associated with their weak economies. But whereas the U.S. social security system is generating negative savings in the late 1970s, the Canadian social security system is still generating positive savings.

There still remains one issue which deserves further attention: that is an explanation for the apparent unexpectedly high rise in the personal savings rate out of disposable income in Canada in the 1970s. It is possible to speculate on a series of factors at work, although the

statisticians in Ottawa admit to not fully understanding all the differences. The following factors appeared to play a role in explaining the differences in personal savings behaviour:

1. Contractual private savings in Canada have received in the 1970s very important incentives which were not provided in a similar way in the United States - in particular, the Canadian incentives to save via deferred tax instruments such as RRSPs and RHOSPs.

2. Farm sector savings are included in the definition of personal savings in both countries. For some reason, Canada's agricultural sector and its agricultural-oriented provinces recorded very heavy personal savings rates in the 1970s. Farm inventories, which are also counted as an income flow, are also defined as contributions to savings. Since the farm sector is relatively larger in Canada than in the United States, this may have had an effect of increasing Canada's personal savings rate above the U.S. level in the 1970s because of agriculture-related developments.

3. In the 1970s, medical services largely shifted from private to public financing. Thus for many families in Canada, their recorded medical care costs, which for the 1960s (and in the United States) appear primarily as personal expenditures on services, seemed lower in the 1970s. That is, Statistics Canada in their surveys now record primarily the provincial insurance costs premium as medical care expenditures, rather than the potentially much heavier private sector payments which would have been made for medical care in the absence of provincially-run plans. Obviously, the United States does not have a government-managed medical insurance care plan and this fact in itself would have resulted in an apparent decrease in personal expenditures for medical payments in Canada relative to the United States - or alternatively, a rise in the personal savings rate in Canada compared with the United States. Once again Statistics Canada officials were unable to pinpoint exact impacts on the personal savings rate of the publicly-run medical care insurance plans.(1)

Our conversations with officials in Statistics Canada suggest that there is much research yet required in this area of explaining the differences in personal savings rates between Canada and the United States.

To summarize, it would appear that the financing of medical care and the additional contractual savings advantages provided through tax incentives in Canada may account for some of the difference in the way the personal savings rate has moved in Canada compared with the United States. But there is possibly one additional effect which is important.

There appears to be a relationship, and one which is not easily understood, between personal savings behaviour and inflation.

For much of the 1970s, Canada's inflation performance was worse than that of the United States, and some observers would argue that this difference has resulted in a higher personal savings rate in Canada as compared to that country. Add to that explanation the ability to deduct mortgage interest payments in the United States from personal taxable income, and one may see that consumer outlays in the United States (either for housing expenditures directly or indirectly for other consumer goods) have an added incentive which does not exist in Canada.

The offical Canadian thrust has been to emphasize savings (RRSPs and RHOSPs), while mortgage payment deductibility provides the U.S. consumer with a spending thrust.

Once again, this subject is extremely complex and requires detailed research. We have only attempted to identify some of the factors at work which may explain why Canada's personal saving rate climbed in the 1970s, so that by 1978 it stood at nearly double the rate registered in the United States.

Table 44
The Financing of Savings - Canada and the United States - Selected Years 1966-1978

Year	Personal savings to gross savings		Government savings to gross savings		Gross business savings (including non-residents)		Personal savings to personal disposable income	
	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.
				(Per cent)				
1966	17.3	26.8	17.6	-1.0		74.2	6.7	6.5
1970	22.5	35.3	17.9	-6.5	59.6	71.2	5.3	7.4
1973	24.8	32.4	12.9	2.9	62.3	64.7	9.1	7.8
1975	26.3	41.1	-.4	-32.9	74.1	91.8	10.9	7.4
1976	29.4	28.6	-.0	-13.9	70.6	85.3	10.8	5.7
1977	30.5	24.6	-3.4	-6.8	72.9	82.2	10.7	5.1
1978	31.6		-8.1		76.5		10.9	5.4e

Sources Economic Report of The President (January, 1978) and U.S. Department of Commerce, Survey of Current Business, Vol. 58, No. 11, Nov. 1978.

Statistics Canada, National Income and Expenditure Accounts, First Quarter 1971, Third Quarter, 1978.

Table 45
Sources of Gross Savings in Canada, 1971-1978

Year	Personal savings	Corporate and government business enterprises	Governments	Non-residents	Capital consumption allowance	Total gross savings	Supplementary data: CPP and QPP savings	Supplementary data: Life insurance companies and trusteed pensions(a)
				(Millions of dollars)				
1971	3,509	3,010	2,510	-184	10,500	20,301	1,278	22
1972	5,015	3,538	2,570	667	11,471	23,405	1,375	24
1973	7,320	4,853	3,832	242	13,355	29,481	1,472	25
1974	9,406	4,907	6,122	1,999	16,046	38,341	1,780	29
1975	12,154	7,667	-212	5,252	18,368	40,125	2,003	32
1976	13,605	7,269	-43	4,347	20,783	46,212	2,183	35
1977	14,914	8,324	-1,703	4,580	23,184	48,939	2,259	36
1978	16,907	9,807	-4,325	5,636	25,145	53,435	2,383	

Note: Adjustment on grain transactions, and the residual errors are included in the total.

a Flow of funds data taken from Statistics Canada, Financial Flow Accounts, Volume II, 1961-1976 (13-563) and Second Quarter 1978 (13-002).

Source Statistics Canada, National Income and Expenditure Accounts, First Quarter 1971, Third Quarter 1978.

Table 46
Social Security Savings in Canada, 1968-1978

Year	Total revenues CPP and QPP	Total expenditures CPP and QPP	Social security savings	Total government savings	Social security savings as a percentage of government savings
			(Millions of dollars)		
1968	1,040	37	1,003	3,030	33.1
1969	1,190	77	1,113	4,183	26.6
1970	1,327	134	1,193	3,327	35.8
1971	1,478	200	1,278	2,510	50.9
1972	1,657	282	1,375	2,570	53.5
1973	1,875	403	1,472	3,832	38.4
1974	2,318	538	1,780	6,122	29.1
1975	2,780	773	2,003	-212	greater than 100
1976	3,282	1,097	2,183	-43	greater than 100
1977	3,686	1,427	2,259	-1,703	greater than 100
1978	4,164	1,781	2,383	-4,325	greater than 100

Source Statistics Canada, National Income and Expenditure Accounts, Preliminary Release for Fourth Quarter 1978, and First Quarter, 1971.

Appendix Table 1
Approximate Estimates of Construction Costs and Employment Generated by Selected Energy Projects

Oil and natural gas projects	Construction period	Direct employment	Indirect employment	Annual operating employment	Construction cost
		(Approximate total man-years)		(Annual jobs)	(Millions of 1977 dollars)
1. Delta/Beaufort(a)					
a) Exploration	1978+	N/A	N/A	400	N/A
b) Development	1983-85	1,000	3,000	300	N/A
2. Dempster Pipeline	1983-85	6,000	26,000	130	1,700
3. Alaska Highway Pipeline	1979-82	13,000	55,000	400	2,900
4. Westcoast Expansion(a)	1978	500	1,500	47	150
5. "Conventional Areas" Gas(a)	1978+	N/A	N/A	N/A	N/A
6. Gas Swaps	1979+	N/A	N/A	N/A	N/A
7. TCPL Expansion	1979+	N/A	N/A	N/A	N/A
8. Q & M Pipeline	1979-81	1,400(b)	4,200(b)	N/A	320
9. Panarctic Exploration(a)	1973+	N/A	N/A	N/A	N/A
10. Polar Gas	1982-87	15,000(b)	45,000(b)	460(b)	6,500
11. Arctic Pilot Project	1979-82	N/A	N/A	N/A	900
12. Tenneco LNG Project	1979-83	3,400	10,200	235	460
13. Scotian Shelf Exploration(a)	1978+	N/A	N/A	N/A	N/A
14. Eastcan Exploration(a)	1978+	N/A	N/A	N/A	N/A
15. Kitimat	1979-80	5,000	15,000	150	650
16. Alaska Highway Oil Pipeline	N/A	N/A	N/A	N/A	N/A
17. Alberta Coal Conversion	1983-86	N/A	N/A	N/A	N/A
18. "Conventional Areas" Oil(a)	1978+	N/A	N/A	N/A	N/A
19. a) Tar Sands III	1980-85	20,000	60,000	3,200	3,000
b) GCOS Expansion	1979-81	250	750	25	125
c) Syncrude Expansion	mid 1980s	8,000	24,000	1,000	1,200
20. Cold Lake	1981-86	15,000	45,000	2,400	3,000
21. a) Heavy Oil Upgrading: Saskatchewan	1979-81	5,000	15,000	300	700
b) Heavy Oil Upgrading: Alberta	1982-84	5,000	15,000	300	700
22. Oil Storage					
a) Wabanex	1978+	1,000	3,000	50	110
b) Canso	1978+	200	600	50	200
Total oil and gas projects		99,750	323,250	9,500	22,600

Appendix Table 1 (Continued)
Approximate Estimates of Construction Costs and Employment Generated by Selected Energy Projects

Electricity-related projects	Construction period	Direct employment	Indirect employment	Annual operating employment	Construction cost
		(Approximate total man-years)		(Annual jobs)	(Millions of 1977 dollars)
1. Hat Creek Power Development					
a) Fluid Bed Demonstration	1979-83	800	2,400	200	100
b) Thermal Station	1984-87	5,000	15,000	300	1,000
2. Columbia River Revelstoke Development(a)	1978-84	11,000	33,000	80	1,500
3. Amok-Cluff Lake	1978-80+	N/A	N/A	300	135
4. Key Lake Mining	1978-83	N/A	N/A	300	200
5. Nelson River Transmission(a)	1974-86	N/A	N/A	N/A	450
6. Thunder Bay Terminal(a)	1976-79	600	1,800	50	40
7. Elliot Lake Mining					
Denison Expansion(a)	1978-82+	N/A	N/A	1,000	N/A
Rio Algom Expansion(a)	1978-80+	N/A	N/A	1,000	210
Preston Mines	1979-84	N/A	N/A	1,000	N/A
8. a) Bruce B Reactors(a)	1976-85	16,000	48,000	600	2,200
b) Bruce B&D Heavy Water	1974-81	13,000	39,000	1,300	1,500
9. Pickering B Expansion(a)	1974-83	12,000	36,000	450	1,500
10. Darlington	1978-87	18,000	54,000	600	2,500
11. James Bay(a)	1974-85	65,000	195,000	500	11,000
12. Quebec Nuclear:(a)					
a) Gentilly II	1974-80	4,000	12,000	250	500
b) Laprade	1974-82	7,500	22,500	550	710
13. Maritime Energy Corp.(a)	N/A	N/A	N/A	N/A	N/A
14. Lepreau Reactor(a)	1975-80	4,500	13,500	227	500
15. Fundy Tidal Power	1982-88	8,400	25,200	50	1,300
16. Cape Breton:					
a) Donkin Mine	1979-82	1,500	4,500	1,000	100
b) Surface Mine	1980-81	500	1,500	100	40
c) Lingan Power Station(a)	1976-85	1,000	3,000	100	400
17. Fluid Bed Boiler (P.E.I.)	1979-87	200	600	20	6
18. Gull Island	1978-85	11,000	33,000	80	1,400
19. Electricity Exchanges	N/A	N/A	N/A	N/A	N/A
20. Glace Bay	1978-82	300	900	N/A	18
Total Electricty Projects		180,300	540,900	10,000	27,300

Appendix Table 1 (Concluded)
Approximate Estimates of Construction Costs and Employment Generated by Selected Energy Projects

Conservation programs	Construction period	Direct employment	Indirect employment	Annual operating employment	Construction cost
		(Approximate total man-years)		(Annual jobs)	(Millions of 1977 dollars)
1. Canadian Home Insulation Program(a)	1977-85	N/A	N/A	3,000	5,000
2. Retrofit of Federal Buildings(a)	1978-83	N/A	N/A	N/A	115
Total All Projects Identified Here		280,050	864,150	22,500	55,000

a Projects already underway.
b Estimates not presented in detailed tables.

Source Background material for statement by Honourable Alastair Gillespie at Federal-Provincial Conference of First Ministers, February 13-15, 1978.

NOTES

(1) In a later study, one of the authors investigated this aspect in more depth. In 1962 medical care and health costs amounted to 4.5 per cent of personal disposable income (PDI) in Canada, and 6.1 per cent in the United States. By 1979 the respective ratios had changed to 2.6 per cent of PDI in Canada and 9 per cent of PDI in the United States. See Arthur W. Donner, "Canada's Economy in the Grip of a U.S. Recession: Outlook 1980-1981," Research Securities of Canada Ltd., June 1980.

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